Telephony.

THE AMERICAN TELEPHONE JOURNAL

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A MAN'S VALUE.

Every man stamps his own value upon himself, and we are great or little according to our own will.— Samuel Smiles.

A Telephone Chautauqua.

One of TELEPHONY's valued correspondents—a manager of a successful exchange in Pennsylvania—in a recent letter offers the suggestion that in these days of vocational training, it would be generally helpful if instruction in telephone practice were given in rural schools and farmer institutes. His idea is that as the telephone is reaching every part of the country and has already become an almost indispensable factor in life on the farm, logic demands that some attention be paid to teaching the elementary principles of telephone practice.

This suggestion seems worthy of serious consideration. The idea of bringing the subject before farmers' institutes is, perhaps, more feasible than introducing it in the rural schools where the teacher has all he or she can do to keep the healthy young country folks at their tasks of learning the three R's. When the farmers come together in their institute or grange meetings in the winter months, however, to exchange ideas on agriculture and listen to lectures and papers on how to make the most of their acres, to increase the yield of their fields and, in short, make life easier on the farm, it would be in line with this work to learn something of the telephone which does so much toward that end.

Rural line managers, doubtless, would be glad to lend their assistance by explaining the simpler rudiments of telephony. By means of a blackboard magneto circuits could be drawn on a large scale and much interesting and instructive information placed before the people to whom telephone service means so much.

Our correspondent points out that not only the farmers but the boys would be interested in what might be called a "telephone Chautauqua," and among the rising generation some future Bell or Edison might trace his first inspiration to work in the telephone or electrical field back to such humble meeting. Certainly no more interesting subject could be discussed in a farmers' institute than the telephone. Furthermore, a wider knowledge of the practice could not fail to make the work of the rural line manager easier. It is a thought that telephone men might profitably consider and TELEPHONY would be glad to hear what its subscribers think about it.

Telephony Belongs to Its Readers.

In the editing of TELEPHONY, the idea kept constantly in mind is to produce a paper which will have something in it each week that will interest the greater number of readers. The editors are, therefore, especially gratified at the number of communications which in the past few weeks have been received for publication in the department of "Letters on Practical Subjects." They show clearly that every department and article are read carefully by the men in the field. When reading of the methods used in one exchange, the readers are reminded of a method or expedient which they have used successfully. It may be better than the one described, or have a feature that is better, anyway; so they sit down and write their ideas in their own way and send them in to TELEPHONY's offices.

Of course, all these letters cannot be published, as more than enough are received to fill the space allotted to that department each week. Nevertheless, we are anxious to have telephone men send in their problems, solutions, ideas, and other items, that all may profit from the experiences of others and thus enlarge and improve this department of the paper. There may be delay in publishing some, but the policy is to publish all good letters as soon as possible. Therefore, a careful selection has to be made in order to present to TELEPHONY's readers matter which will be of practical use to them.

The various communications indicate that TELEPHONY's readers are interested in the matter presented, all of which, as previously stated, is extremely pleasing to the editors.

You're Overlooking Johnny

By HERBERT KAUFMAN

When you were a boy, a laborer could buy sufficient solid, nutritious food to nourish his family. When you were a boy, standards of education were not half so high as now. When you were a boy, the distance between your home and your working place could easily be covered on foot. When you were a boy, fuel was cheap and a few pennies could buy coal or wood enough for the day's warmth. When you were a boy, businesses were small; the personal equation was a strong note in shop, office and store; the "Boss" knew his men by name; coached them, watched their progress, sympathized with their troubles, their aspirations. But Johnny lives in an era of high costs, of pretty packages and small quantities, of costly meats and expensive vegetables, of high rents and cotton-mixed clothes.

The town has sprawled out and the poor folks must live on cheap land, far in the outskirts, so Johnny can't walk to work. He must ride twice a day and carfare eats the luncheon that he can't afford.

Johnny is a mere unit in a modern organization, conducted on a law of averages by experts, with a table of mathematics where a heart ought to be. He doesn't exist as a human! He's just an obscure, unimportant cog in one of the wheels of a great trade machine. He doesn't know anything about the business, except his own restricted, intensive duty. He hasn't time to see the rest of the works.

As he grows older and seeks to advance himself, he will encounter newcomers, strong, well-fed, healthy lads, who began with a better education than he will end with.

He's handicapped in every quarter. Neither his body, nor his brain has a chance to feed upon the right food. He is neither strong enough nor old enough to be a bearer of burdens. He'll be broken down before he is broken in; worked out and starved out before his faculties can ripen.

Meanwhile, you'll continue to pay him the least sum at which his services can be secured. You'll grind him down to the last penny as a matter of business principle. And when his utility and his vitality are exhausted, he'll be effaced and replaced without an instant's consideration.

But, aside from the fact that it's your duty as a citizen to contribute as far as possible to the welfare of tomorrow by protecting the interests of a defenseless child; waiving all consideration of humanity and sentiment; eliminating every question of emotion, of tenderness and of charity, it's a bad profit that you're making. It's an unintelligent procedure. And Johnny is not the only one who is being cheated out of a chance—you're hurting yourself when you don't help him.

Johnny is still at an age when his character, his habits, his ideas, and his ideals are yet unformed.

He's a colt ready for the trainer's hands—young enough to grow out of or into anything. He hasn't struck his gait yet. He may have all the undeveloped instincts of a thoroughbred.

Educate him along the right lines, and some day, when all your fortunes are at stake, he may run a winning race for you.

Don't estimate his pay solely by his present utility. Give him a living wage, and charge the difference to your deferred profit account.

Remember how many firms have been perpetuated and protected by partners who began as errand boys, cash boys and office boys. Realize that a wise employer is never as hard-headed as when he is soft-hearted.

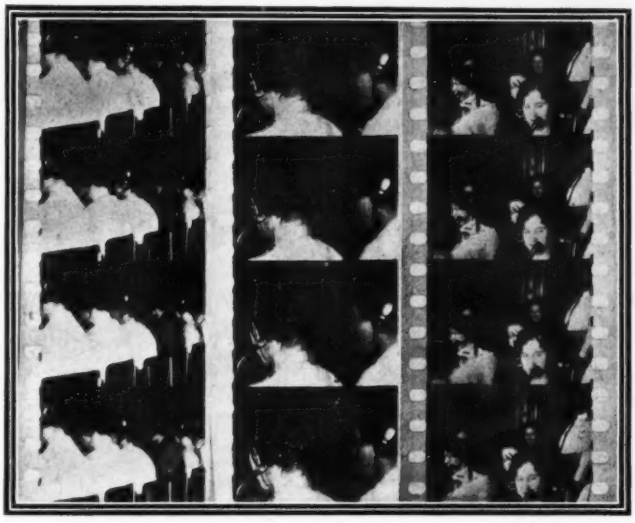
Copyright by Herbert Kaufman.

The "Movies"—The Latest Means for Telephone Publicity

Educating the Public to the Bigness of the Best Business in the World—How Wrong Impressions of Telephone Operating May be Corrected Through Moving Picture Theatres—Benefits of Such Publicity—What One Company Has Done

By Stanley R. Edwards

There are very few communities in this country which do not boast of a moving picture show. In fact, the number of towns without a moving picture theater could probably be counted on the fingers of the hand. During the past few years the moving picture industry has grown tremendously and at the present time over ten million feet of films are produced weekly for use in these theaters. In the past year, three billion, six hundred million spectators witnessed the moving picture exhibitions in this country.

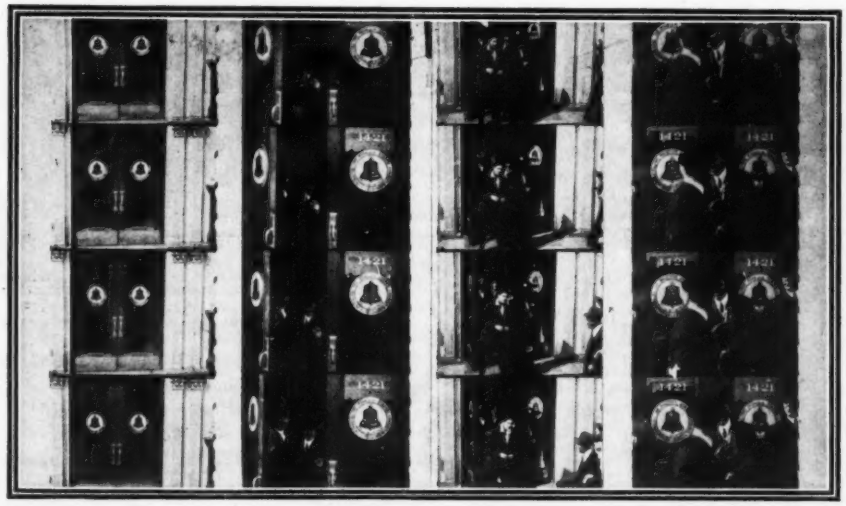


Operators at the Switchboard and in Denver Operators' School.

The tremendous growth of the industry has been recognized by some manufacturing companies as an excellent means for what might be termed indirect publicity. Moving pictures have been taken in and around various manufacturing plants showing how certain products are made. Just recently one of the large coal companies in Chicago spent $2,500 to obtain a film showing coal mining operations in West Virginia. It is entitled, "A Day in the Coal Fields," and starts out by showing a coal mining town early in the morning. Presently whistles are shown blowing and the miners are seen making their way to the mine shafts. Then a group is followed to a mine; the men get into the cage and are lowered down to the mine shaft. The cage is seen descending into the earth and upon its arrival at the bottom of the shaft, the men start out for the workings and later are shown in a chamber preparing for a blast. When all is ready, the miners retire and the charge is exploded. The coal thus loosened is gathered and placed in the cars, which are then taken out to the shaft and hoisted to the top. The coal passes to the tipple and finally on out to the railroad cars for shipment to the market. The scene changes and the men in the mine are shown gathered in groups eating their mid-day lunch. Then mice appear and are shown to be unafraid of the men, some of them even doing little tricks. The film which depicts so faithfully and accurately all the sights to be seen in a day's visit to a coal mining town, is so arranged that the management of any moving picture theater will gladly run it as a feature of his entertainment. It is also used at conventions and other public meetings where an explanatory lecture is delivered regarding the various scenes. But what of the benefit to the coal company? Indirect publicity with the educational feature that later may be depended upon to aid in justifying the price asked of the consumer for coal.

The Closing Film, "Number???"

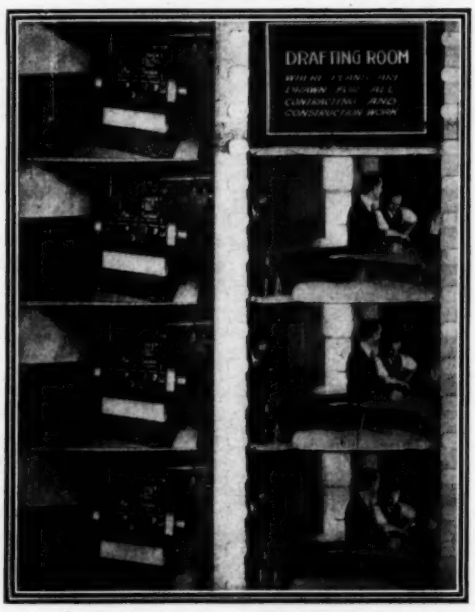
Pictures of this nature are, of course, along educational lines and have met with an excellent reception by the public. On the other hand, many pictures are shown which are not educational and in fact some of the scenes are burlesques upon actual conditions. TELEPHONY's readers without doubt have been witnesses of picture shows depicting some scene laid in an operating room, or offices wherein telephone switchboards are located. The antics of those taking the part of operators are exceedingly amusing to persons who know of the actual conditions, but those of the spectators not knowing the actual conditions, are quite likely to believe them as shown on the screen and thus obtain a much distorted idea



About Seven Hundred Employes Passed Out Through the Main Entrance Doors.

of the methods actually followed in telephone switchboard operating.

In a recent issue of TELEPHONY a comment was made upon such burlesques of the telephone business and the suggestion was made that the moving picture field offered an excellent



Power Plant and Drafting Room.

opportunity for telephone companies to acquaint the public with the operation and details of their business. Shortly after a letter was received from the Mountain States Telephone & Telegraph Co. stating that moving pictures had been made of various departments and scenes in connection with its Denver telephone plant. The company's officials had seen the publicity which might be obtained from the use of the "movies" and several months ago had taken action on it. When the idea was taken up, the main intention was to impress upon the Denver public the vast size of the local pay roll. A film was therefore taken showing the employes leaving the Denver headquarters telephone building.

Arrangements were made with the various departments so that all the employes would leave the building at the same time. They were gathered in the halls of the building and when everything was ready, the main entrance street doors were opened and some 700 to 800 people passed out through them. The stream of outgoing employes continued for 10 minutes and made a decidedly impressive showing on the film. Clippings from this film are shown in one of the illustrations. Another illustration shows a section of the film made in the operating room of the main Denver exchange showing the operators at work at the switchboards, while another view shows a near view of the switchboards and operators, although rather indistinct in the illustration. Still another view in the same illustration is a clipping from the film showing a scene in the operators' school room.

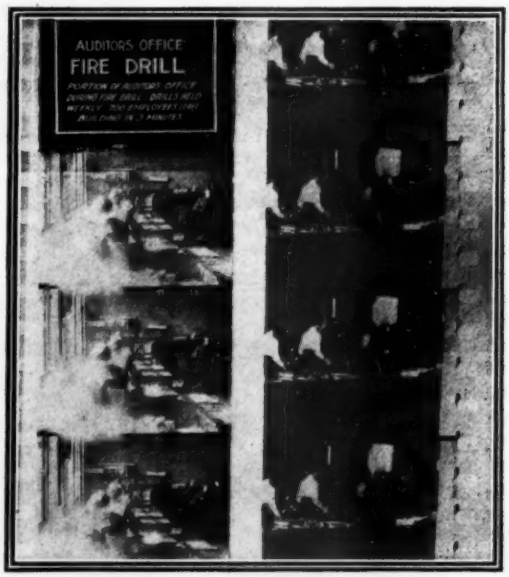
Other films, sections of which are presented in the illustrations, show the facade over the entrance of the Denver headquarters building and a view in the printing plant showing how the 50,000 Denver directories are printed, 10 presses being engaged in the work. The automobile of the emergency line crew is shown making a run, while on another film the emergency crew of linemen are shown at work in mid-air. A fire drill of the employes in the auditor's office is the subject of another film, while the operation of the telephone power plant is illustrated by means of a film taken in the engine room. Another important department of the company that is shown, is the drafting room, where all the plans for the contracting and construction work are made.

The provisions for the comfort of the operators when off duty are depicted by a film taken in the operators' rest room. The closing part of the telephone film reel, which was about 500 feet long, shows three of the company's operators at the main entrance of the building. The title "NUMBER???" accompanies this part of the film. The vivacious, yet businesslike, operators in this group, indicate to the public the type and character of the "Girl at the Switchboard."

After the films were taken, arrangements were made to have them shown at one of the local Denver vaudeville theaters in connection with the films called "Pathe Freres Animated Weekly," a collection of interesting scenes from all parts of the world. At the time of this exhibition of the film, the Denver plant department placed special wiring in the theater and installed telephone bells of various tones in different parts of the auditorium. A keyboard was placed in the orchestra pit and some so-called "telephone music," "Blue Bell," "Hello Central" and "Hello People," produced a rather unique effect in connection with the pictures.

The film was kept in the Denver theater for a week and then taken to Colorado Springs and Pueblo, after which the reel was sent to other parts of the extended territory in which the Mountain States company operates. Duplicate reels were made so as to facilitate the showing in various districts. Altogether, the film was run in nearly 300 moving picture theaters throughout that company's territory. Most of the moving picture theater men were extremely willing to run the films, for in addition to being a feature that cost nothing, Publicity Manager H. P. Story, of the Mountain States company, arranged to take a quarter page display advertisement in the theater's name, for a day or two before the film was run, in the papers of all the towns where the pictures were shown.

The officials of the Mountain States company feel that the investment in the "Movie Field" was a success and are planning

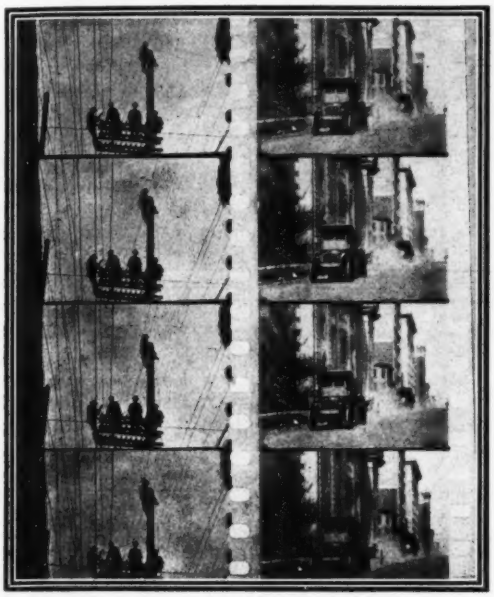


Office Force Accustomed To Quickly Leaving Building.

another film which will give more of the graphic details of the operation of the telephone exchange.

Most telephone companies have standing invitations to the public to inspect the telephone exchange, but very few accept such invitations. With the use of the movies, the public, in great numbers, will take a "Little Journey" to the office of the telephone company.

The advantages of showing properly selected scenes of a telephone company's many activities are numerous. First, as in the case of the Mountain States company, the public may be informed and impressed by the number of employes and variety of duties which they perform. Few persons realize



Emergency Line Crew, Showing Their Work.

the many and different classes of work which must be done. Also if the company wishes to secure applications from persons desiring employment, especially operators, the moving picture affords an excellent means for reaching a great number of people and explaining silently, yet effectively, the character of the work. Education of the public as to rates may also be accomplished. What could be more potent in impressing upon the public the bigness of "the best business in the world," than a film along the order of the pictures published last spring in The Telephone Review, and reproduced in TELEPHONY, under the title, "A Day With the Plant Man on Long Island"? Surely the telephone business is big enough to provide many films that would eagerly be sought by moving picture theaters for features.

Illinois Governor on Control of Public Utilities.

At a recent conference of governors at Colorado Springs, Colo., Governor Dunne of Illinois, delivered an address on "The Growth of Public Control of Utilities" in which he declared that the movement for public control is advancing by leaps and bounds and expressed his belief that within a few years there will not be a state in the Union which has not a public utility commission empowered by law to control the service and rates of the corporations of the state.

In opening his address Mr. Dunne discussed evils complained of when private corporations or individuals owned and operated public utilities without any control by the government. He spoke of their "extortionate charges," their "cheap and inefficient service," their "impositions on the ordinary citizen consumer" to "swell their dividends at the expense of the unprotected and exploited consuming public." He recalled that the people finally "lost patience" and "went to the polls with a demand for redress," asking municipal ownership in Chicago and "control of these utilities" in Wisconsin.

Governor Dunne then continued as follows:

Illinois has just adopted a most comprehensive law on the subject. The method pursued has been that which was first inspired and outlined by Senator La Follette in Wisconsin, which placed the absolute control of all such utilities in so far as fixing rates and regulating the schedules and operation of these utilities, in the hands of a public utility commission appointed by the governor.

The legislature passed the law substantially as submitted, except that it struck therefrom an article reserving to the larger cities of the state the right to regulate and control the intra-utilities within their boundaries.

The provision of article 6, however, as originally drafted by myself and my advisers, was declared not to be sufficiently explicit and comprehensive by some of those who believed in preserving the rights of home rule in the larger cities, and in the endeavor to re-draft this provision at their request so as to make it more explicit and comprehensive, much time was taken which delayed placing the bill upon its passage until very late in the session. This delay, I believe, was one of the causes contributing to the failure of the passage of the bill as finally drafted.

The only three states that I know of which provide for home rule for cities in the matter of regulation of municipal utilities are Ohio, California and Kansas.

I have been informed by one of the railroad commissioners of California, where this dual law is in force, that the last legislature has proposed to the people a constitutional amendment under which the legislature is to have the power to confer upon the state commission control over the rates of public utilities within the cities of the state, and that it is probable this amendment will be adopted.

Prior to this year Missouri gave to the cities of St. Joseph, St. Louis and Kansas City home rule, and the right to regulate the intraurban business of its local utilities. Washington gave this right to Seattle. The 1913 legislatures, however, I am credibly informed, took this power from these cities and placed them under the jurisdiction of state-wide commissions.

Governor Dunne again referred to the Illinois situation as follows:

If public control should fail, as I believe it will not, then the only alternative left is the public ownership and operation of these utilities.

I am pleased to say that after a struggle of eight years, during which I have advocated incessantly and persistently the public ownership and operation of public utilities, I have had the satisfaction within the last sixty days of placing my signature to a law which gives every city in the state of Illinois the right to own and operate its public utilities, and to even purchase the product of such utilities at wholesale and sell it to the public at retail."

Proposed U. S. Control of Telephone and Telegraph.

A special news dispatch from Washington, D. C., states that a movement is gathering force in Democratic circles to bring the telegraph and telephone lines of the country under the postoffice department in some form of government ownership. Unless nipped by a protest from the White House the movement probably will find its first expression through the annual report of Postmaster General Burleson which will be presented to the president Jan. 1, 1914.

What is known of the plan as it stands does not contemplate action along lines advocated in bills looking to government ownership of telephones and telegraphs, which already have been introduced.

The first step to be taken will be to call upon the postmaster general to submit estimates of the probable cost (1) of installing government telegraph lines and telephone lines in competition with the existing companies and (2) of purchasing all existing lines. Either would involve a physical valuation of the two companies, probably through the Interstate Commerce Commission.

Representative Lewis of Maryland is now at work on a measure calling for government ownership of telegraph lines.

Indiana Commission Employs Telephone Inspector.

The Indiana Public Service Commission has added to its force a telephone inspector, an electrical engineer and a mechanical engineer. Leegrange Marvin of Frankfort, a Purdue man, will be the telephone inspector.

Mutual Relations

Their Doubtful Interpretation—Monopoly a Self-Destroyer

By J. C. Kelsey

"Enclosed find a clipping which may be of interest to you; the interest here is bum service, called when you are not wanted, bats in the ear enough to knock your ear drum out, high prices (2.50) for their obsolete and rotten four-party selective service, and a charge if your telephone is beyond a clearly defined dead line."

This letter came from a western telephone man who recently moved to New Jersey, and who uses the monopoly telephone service of the New York Telephone Co., so often described by foreign visitors as the perfect service of the world.

You know how polite foreign visitors are, and especially when you entertain them nicely. So their testimony means nothing.

I think you can guess what the clipping is. You have seen it in every paper in America.

It is entitled "Mutual Relations and Interests of the Bell System and the Public."

By actual count, I have received over 30 clipping of this selfsame wonderful document.

I really wanted to escape making comment upon this piece of Bell Press Bureau literature with which we are all so familiar.

Like Mother Goose, it never changes its sing song style: It is the same yesterday, today and tomorrow. Your children will be as familiar with its lines as you are.

Now, frankly, have you any real knowledge of any citizen reading those two columns clear through?

I do not believe one man in forty read it closely. (Now did you, yourself?) unless some New England investor did it, who is accustomed to reading a heavy Boston paper at the breakfast table.

This cut and dried literature is furnished principally for New England consumption. When it gets beyond that benighted country, it always irritates us.

Its promises always remind me of what the chairman of a switchboard committee once said regarding the salesman's promises:

"It would be fine if what you say is true, and what you claim will be fulfilled."

And so it is with this Bell promise talk.

Ninety-nine per cent. of us have little or no faith in their promises, and very little more in Independent denials of a Bell sell-out.

There has been an awful sight of lying and misrepresentation in the telephone business.

As long as things break their way it is all right; but when you ask something your way, it is not so sure.

But then, that is human nature.

Why expect this overgrown bunch to keep a promise—especially one made by an underling who can't be located by the New York office, except with difficulty.

The first thing in the clipping which seemed at all important was the claim that the Bell company was first to advocate commission control. Advocating commission control and obeying adverse orders are two different things.

Of course, the reader of this two-column bunk story is not supposed to know anything about their stubbornness or unwillingness to obey a public demand.

The public has demanded physical connection. Yet I see from clippings that the Bell company did not obey the Wisconsin Commission in the LaCrosse case.

And I note also that the Bell company has attacked the validity of the provisions of the Oklahoma constitution which requires telephone companies to make physical connection.

Yet we are told in this two-column advertisement that if the Bell company had not solidified themselves into one grand an . .niversal system, the public would compel them to do so. Somehow their claims and actions do not fit.

The Oklahoma case is a typical one. The Bell company purchased the local plant at Pond Creek, and, of course, raised the rates.

How often we hear that one company in a locality saves the public so much money. Records do not show it—not a penny.

Anyway the angry Pond Creek people organized a new company—and, of course, made a success of it.

The Bell company cut its rates even to 50 cents a month, but it had no effect. They could not give the service away.

Oh, how much it teaches the value of this one grand interdependent universal and intercommunicating telephone system!

Somehow the public does not fully appreciate its beauty.

The Pond Creek locals, having won the victory, the survival of the fit, conceived the idea of the much advertised beauty of one system and asked the state commission to enforce the Oklahoma law.

The supreme court decided also, with **the** commission, that the law was a good one, and should be enforced.

But bless you, they declared at first that they would take that case to the United States Supreme Court on the grounds of confiscation.

They believe in state commissions only when they decide their way.

So I wish we could be spared from this literary plague regarding public relations.

The public function is to pay the bills. And they know it.

Any bunk or josh about the public getting benefits is wasted on about 99 per cent. of the public, too.

The only public relation sought is the monopoly relation.

Their only idea of service is to collect the money.

Just to illustrate the joys of this sacred relation: I had a call from Ohio. I struggled vainly for some idea at least where the call came from.

In the recesses of a sound-proof booth, I perspired in a vain effort to use this one grand and universal service over lines not 400 miles long. A few hours later, I was called by the telephone company to say that I could now have a good line, but, of course, would have to pay for it.

I was asked to pay for a call from some stranger in Ohio. I used the telegraph, which also is about as efficient as the telephone.

All this jest and jumble about the necessity of interdependence and intercommunication is so silly, as long as girl operators are used as repeaters.

Now for the big joke:

"We believe that any surplus beyond that necessary to equalize dividends on a fair basis should be used by the company for the benefit of the public to make service cheaper, etc."

Did you ever hear Bell experts try to explain this surplus?

Make up your mind to this fact: "There ain't no such animal." There never will be, either.

Really, there is nothing to become excited about in this article.

I don't believe anybody read it; besides it contains nothing new or startling.

It does strike me that people who pretend to despise waste and duplication should practice it in their speech and literature. The whole story can be found in the last annual report.

Just who wrote that last annual report is a matter of doubt. Several bright young men claim the honor. But I don't believe the young crowd wrote any of it. It still carries the whine of the early '80's and '90's.

Like Joe Smith's book of Mormon, I believe this whine came from the recesses of some New England hills, all ready for man's use.

One can't read the celebrated two-column advertisement without thinking of the New Haven road.

The other day the New Haven railway had a nice little wreck. Just 22 people went to their death with that frozen look of horror on their faces. Did you ever look into human beings' faces the instant after the wreck? You will never forget it. Besides nearly one hundred people were maimed for life.

Now listen to the reason for this useless wreck: The New Haven road is a New England monopoly. Its troubles, its inefficiency and its utter confusion was born of monopoly.

Employes of monopoly have neither initiative, efficiency, courage nor hope. Such a system breeds incompetence, carelessness, stupidity and utter shiftlessness.

Monopoly is being paid in its own coin.

Newspapers say that J. P. Morgan & Co. have withdrawn from the New Haven road on some account.

Things surely must be pretty rotten when this firm, after so many years of service, parts from this road.

You never hear of trouble on the Pennsylvania, nor even much on the New York Central.

The earnest competition on these great systems puts an end to wooden coaches and Pullmans. They are sent to monopolistic roads, who can use kindling wood without losing business. But the competitive roads give the public steel cars, which can roll off embankments or collide without murdering innocent patrons.

The rottenest, poorest service I ever saw was between Portland and Boston—miserable dirty cars, and even awful parlor cars. Coaches were used on that fast flying train that would be scorned by immigrants.

Monopoly, that dear loving friend of the public, has its own notion of public relations. They can't be changed.

But you and I know that monopoly never fails to get its toll—don't forget that.

As I read that two-column advertisement, I could not help but think of the public relations in Vermont, how pleasant they were, and how appreciative the public is.

As I read the commissioner's report, I saw that monopoly had not changed any spots in Vermont. It was amusing for the commissioners to think they could get any information from Bell officials in Vermont.

Vermont is but a whistling point—the books are kept in Boston and New York. Think of the general counsel of the Bell trying to tell the cost of a pole!

Anyway, that kind of information was all the commissioners got from the Bell company, whose published desire is to do something for the public.

Bum service, clicking of receivers in the subscriber's ear, obsolete four party line service, etc. All these are the handmaidens of monopoly.

I read a speech by a Bell official in which he deplored the terrible effects of connecting with Independent telephone apparatus.

Something more for New England and Wall Street consumption.

But it reminded me of a patent medicine advertisement in your home paper in which the miraculously cured patient lived over a thousand miles away.

We learn from this speech that the telephone troubles of Paris are due to 150 types of telephones. It seems that the Parisian trouble shooters cannot find wagons large enough to carry piece parts.

Anyway, this Bell official deplores the tendency to connect Independent telephones to the monopoly-made devices. Do you know why?

Because everyone knows that the monopoly-made goods will not stand comparison with the competitive product.

They are afraid to take the chance.

Just think of it, it has just been discovered that it is a dangerous practice to connect with competitive made telephones!

And all this time they have been working night and day to secure 3,000,000 connected telephones regardless of make and name—not 200,000 of them Bell-made. But the New England investor must be kept in a monopolistic frame of mind, you know.

Some concerns get fanciful notions. The size of the concern does not matter.

The larger, the more foolish or silly do they ride their hobbies.

Witchcraft was a fanciful notion, devised by a crafty New Englander, who was losing business to a live competitor.

Not being able to compete, he wanted a monopoly. So witchcraft was devised to burn successful competitors at the stake.

The Puritans wanted a monopoly nearly 300 years ago. Today they still worship this fetich.

So we have telephone witchcraft today.

It is the idea of discouraging or destroying apparatus which is superior to theirs and which is likely to interfere with their incompetency.

No one ever accused the Puritan of great energy, competence or upbuilding. He was a destroyer pure and simple.

Not only of property but of joy and happiness.

What a pity the Mayflower did not sink on its way over?

New England was conceived in brutality and severity. It knows nothing else.

It has its horrors, such as its knitting mills, such as no other land has. It is a fit place for monopolistic trains to run off the track.

The punishment is proper—for the crime is 300 years old.

H. G. Wells wrote a story of an invasion by men of war. Their vessels were towers equipped with but a burning, destroying, scourging light, and seemingly could walk on four uprights.

Nothing on earth could resist. The destruction seemed inevitable.

One day the Martian crafts seemed lifeless.

After a time the surviving people investigated.

It was found that the Martians had been destroyed by the gases of their own destructive tactics.

In other words, the monopoly had wrecked itself.

I believe fully that no monopoly was ever created to survive the penalties of its natural follies and weaknesses.

MORAL: It is according to what Mutual means.

The Story of the Johnstown Telephone Co.

The story of the Johnstown Telephone Co., says the Johnstown (Pa.) Leader, is one of the most fascinating of any of the many tales of business romance to be found in western Pennsylvania. Begun in 1895 with only 75 subscribers, to meet purely local needs, the company now has over 7,000 subscribers and has connections reaching all over the western end of the state. The original plant of the company, which is now admitted to have been little more than junk, has been cast aside for a thoroughly modern equipment that is giving the best of satisfaction under all manner of conditions. The stock of the company has risen in value from practically zero to one of the highest priced securities on the local market. In fact, most of it is not on the market.

One of the causes for the formation of the Johnstown Telephone Co. was the fact that the business men of the city considered the rates charged by the company then in the field to be too high. Rates in Johnstown are now said to be the lowest in the United States for a city of this size. Competition has, of course, brought down the prices of telephone calls in Johnstown greatly, but it should not be forgotten that the primary cause of this healthy state of affairs is and always has been, since 1895, the fact that the Johnstown Telephone Co. was owned by Johnstown people, who have taken good care to see that the control of the company remained in their own hands and that the value of the service did not depreciate in order to boost dividends, though the dividend end has always been an extremely desirable feature.

It is undoubtedly due to the cheap and efficient service given in Johnstown that the city is so liberally supplied with telephones. In fact, it has come to be almost axiomatic that it is more expensive to be without a telephone in Johnstown than to have one in the house, for the telephone, at the price offered, saves errand-running to a remarkable degree, particularly in the residential districts. The multiplicity of telephones in Johnstown also adds greatly to the safety of the city, since it affords an excellent auxiliary system to the fire alarm wires and practically makes impossible the starting of any large conflagration before it is reported to the city fire department.

Recently the Johnstown Telephone Co. has installed large, modern exchanges in Conemaugh and Moxham, the latter being an addition to the switchboards already installed. The Conemaugh service is now practically as much a part of the city service as is that of Moxham, the whole forming an aggregation of subscribers that compares favorably with the total of cities twice the size of Johnstown.

Because of the peculiar geographical configuration of Johnstown, it is doubtful whether the results now achieved could have been attained in any other way than through the application of local talent to the solution of the problems presented. The city lies sprawled out in the three valleys of the Conemaugh, Little Conemaugh and the Stonycreek rivers, running for seven miles up and down stream, with merely scattered suburbs on the hilltops. Yet this greatly divided population is knit together in a solid whole and made a closely assembled hive of industry and social intercourse through the marvelously effective system of the Johnstown Telephone Co. and its rival.

The service given the local field through the Johnstown Telephone Co. is of itself a great triumph of Johnstown genius and enterprise, pluck and aggressiveness. The officers of the company—all Johnstown men of tried reputation and character—are: President, Charles Griffith; treasurer, P. F. McAneny; secretary and general manager, Edwin D. Schade. These and the following constitute the board of directors: W. F. Murdock, Isaac Marx, P. S. Fisher, Dr. J. B. Lowman, George W. Swank and James P. Thomas.

Advance in Rates at Geneva, Ohio.

At a recent meeting of the directors of the People's Telephone Co., Geneva, Ohio, a new schedule of rates was adopted to become effective on October 1. The company operates an exchange at Madison, Ohio, and free service will be given between the two places.

The new rates of the company will be as follows:

Individual business telephones, $24 a year; two-party business telephones, $21 a year; individual resident telephones, $18 a year; two-party residence telephones, $16.50 a year; four-party residence telephones, $15 a year; eight-party rural, $15 a year.

This will be a slight raise for Geneva, but a considerable advance for Madison, where the business rate has been only $15 a year and the residence rate $12. Since acquiring the North Madison company, the People's Telephone Co. has installed a new switchboard at Madison and unified the service.

Prof. Bemis to Advise Interstate Commission.

Professor Edward W. Bemis, telephone advisor of the Chicago city council committee, has been appointed a member of a special committee of five to act in an advisory capacity to the Interstate Commerce Commission in making the physical valuation of the railroads of the United States authorized by Congress. The purpose of this committee is said to be to take the recommendations of the board of engineers appointed to assist in the work and reconcile them with the less technical views of the members of the commission.

Proposes Chair for Instruction in Appraisement.

J. M. Atkinson, chairman of the Missouri Public Service Commission has recommended to the curators of the University of Missouri the establishment of a chair for instruction on the subject of physical valuation and appraisement of public utilities of every character. Mr. Atkinson believes that such a course should be opened in connection with the economics and engineering department, the graduates from which would be eligible for employment by the Public Service Commission.

The Rejuvenation of the Craneville Telephone Exchange

A Story in Serial Form, Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged, and Changed Successively from a Grounded to a Local Battery Metallic System and Later to Common Battery—Fifth Installment

By Paul Hamilton

"What's the matter with this generator, Frank? It turns like a worn-out washing machine," cried Kitty, as Frank came into the exchange the following morning.

Frank looked at Mr. Barrows inquiringly, and remarked, "That's one thing that has never given me any worry."

"It needn't now," said Mr. Barrows. "That little job we did yesterday makes all the difference. You see it is like this," he went on, taking his pencil and a block of paper. "Here's your armature, and here are your contacts or brushes. This is grounded and this goes to the line through the key. (Fig. 4).

"If you open the ground, your armature will not pick up any load, and will turn easy. With a poor ground, such as we found yesterday, it only picks up part of a load, but enough to ring the bells. Now it is picking up a full load and naturally turns harder. What I would like to figure out is, why that one telephone should have rung down all those drops, and why the other telephones in the group did not do likewise. Is there any difference in the wiring of the sets?"

"No sir. There isn't that I know of, but the generator on Mrs. Stokes' telephone is larger than the others. It's only a five-bar but the bars are a fourth wider than the others and the armature is larger," replied Frank.

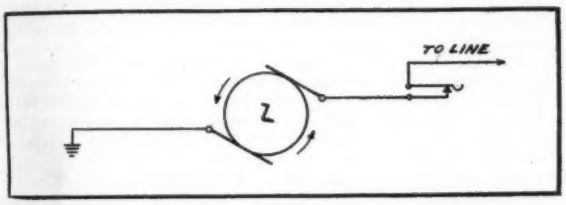


Fig. 4. Diagram Illustrating Hard Turning of Hand Generator.

"That, no doubt, accounts for it," commented Mr. Barrows.

"What I don't quite see clearly is why only a certain number of drops fell," said Frank.

"Perhaps I can explain that," answered Mr. Barrows, again resorting to his pencil and paper. "Here are the drops, as you know, affording two paths for the generator current, (Fig. 5) one to the common ground and one through the windings of the drops out on the lines to ground.

"This group of lines afforded lower resistance than our office ground and enough current took the path through the coils to throw the drop shutters. No doubt the current from the other lines traveled the same path, but the generators not being so strong, the effect was not so great and did not disturb the other drops."

"Say, Frank," interrupted Kitty. "Here's a whole row of drops that can't get the office. Mrs. Stubbs just called me over Polson's telephone. She seemed to think I was to blame. I shut her off mighty quick. I told her I didn't care if she never got the office."

"But Miss De Land, **we do care,**" said Mr. Barrows. "You must be more considerate and careful of your manner of speaking to people."

"I haven't got time to run this board anyway," answered Kitty.

"I realize that and have asked Miss Dietz to come and relieve you. If you can give her a little time for a day or two until she can become familiar with the rules, I think we will get on nicely."

"The sooner the quicker," pouted Kitty.

"Now, Frank, these drops that are sticking, brings us up

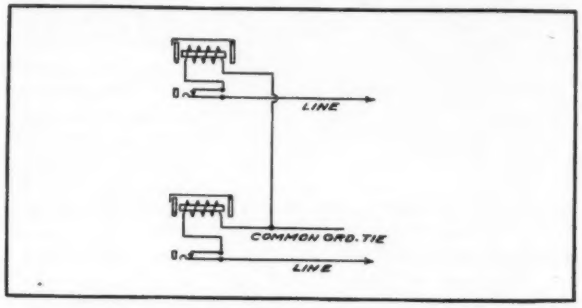


Fig. 5. Paths for the Ringing Current.

to the other problem I wished to consider before we take up the work in a routine manner. Have you been keeping a trouble record?" asked Mr. Barrows.

"No, sir, we haven't."

"Well, we'll start one right now. Here is a blank book that will answer for the present. We'll charge this case against Mrs. Stubbs' line, although it may be inside trouble," said Mr. Barrows.

"I'm sure it is," said Frank. You see the drop mounting plates are loose in the board and I've had to wedge them. The wedge has fallen out from behind this bank. I can fix it in a minute."

"All right," agreed Mr. Barrows. "Fix it temporarily, and we'll see if we can't find a permanent cure later. I see you have all the banks wedged out at the bottom. Why not drop them into place and set the frame of the board level?"

"We tried that, but somehow the floor won't stay level. It seems to settle on this side. Mr. Rankin has been going

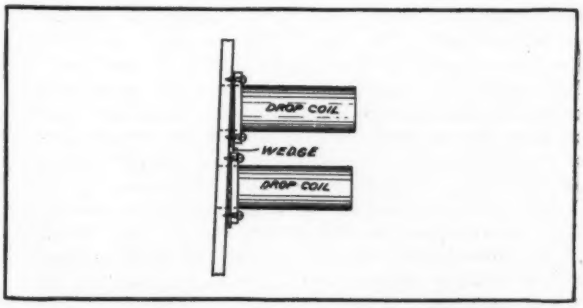


Fig. 6. Wedges Used to Level Drop Mountings.

to put a basement under here for more than a year and we intended to brace the floor then," was Frank's reply.

"Can a man get under the floor," asked Mr. Barrows.

"Oh, yes, there's more than two feet clearance under it."

"Well, then, we must find a jack screw, lift the floor up level, and stay it there with stone or brick piers. Then

we can set and adjust the drops properly. That will eliminate that temporary brace to the wall back of the board also."

Frank spent the remainder of the day under the building and at night the floor had been thrown back to its proper level. Then the wedges behind the mounting plates (Fig. 6) were removed.

At six o'clock, as Frank was preparing to leave the exchange, Mr. Barrows said:

"Frank, have you any objection to coming back this evening? We are not going to have much opportunity to go into details during the day and I'd like to lay out a little work ahead. Also to go over some matters with you which are not clear to me as yet."

"No, sir. I'm anxious to see this plant put 'shipshape' again."

"All right. I don't believe in making a practice of working nights, but it may be advisable now and then for a while. I'll be here about seven-thirty."

On his way home, Frank met "Germany" Dietz.

"Hello, Germany."

"Hello Frank. What's the good word?"

"Well, I don't know. Things are looking up a little, I guess."

"Sure, sure. I been reading the rules your new boss gave my Nellie. It reads like telephone talk."

"I haven't seen them yet," returned Frank. "I wondered when Nellie was coming to work."

"Tomorrow, I guess. He said to come when she got the rules to memory."

"By the way, Germany, he's going to put on an extra man for a while, and I told him you would be glad to come back. He told me to bring you down Sunday morning. How will that do?"

"Fine, fine as silk. The brickyard is getting slack. Only working eight hours now. Is he going to do some building already?"

"I don't know. Not for a while, I guess. He hasn't said much, but I guess he's got a pretty clear idea of how the land lays."

"All right, I'll see you Sunday."

When Frank returned to the exchange, Mr. Barrows was already there. He had brought a large flat top desk into the room and had many papers arranged upon it, among them a large size map of the town.

"Sit down, Frank, and have a cigar. I'm going to talk a little before we get down to the details about which I shall want your assistance.

"I've been in this business a good many years, and naturally have picked up more or less of the theory and practice of large exchanges. I've come to the conclusion that they are applicable to smaller exchanges, if properly modified.

"For instance, I have selected certain operating rules from this manual of over 100 pages, and I'm going to put them into practice here. I have also another reason for this. While I believe it would be good practice in any small exchange, I think it is more the case here.

"You'll agree with me that a large number of our subscribers are dissatisfied and they have cause to be. It will be a long time before we can give each of them personal attention; that is, inspect and correct the faults of the lines and equipment.

"The operator comes in touch with them more often than either of us can. By a radical change in her methods and attitude, they will see that a change is under way. Let us hope that real courteous treatment will convince them that it is for the better.

"Now here are the rules that will go into effect when Miss Dietz takes charge of the board. The young man who attends the board at night must likewise conform to them.

ANSWERING CALLS.

Upon receiving a signal, the operator will adjust a plug to the jack corresponding to the drop number and say, "Number, please." If no answer is received to the first request for the desired number, the operator will repeat the phrase, "Number, please."

If necessary to make a third request, she will say, "What number are you calling, please," and if no reply is received, will disconnect.

If another signal is given on the same line with like results she will report the line as hereinafter directed.

Upon hearing the subscriber, but not distinctly enough to understand the number wanted, the operator will say, "What number?"

"The general practice is to repeat the same phrase, but I think a slight change overcomes the criticism of indifference, often made by subscribers.

Upon being given the number, the operator will repeat it as spoken by the subscriber. If not corrected she will complete the connection by ringing the number called.

"There is another point in which I do not agree with the general practice; that is, having the operator transpose the numbers in repetition. By that, I mean, if the subscriber calls one-twenty-five, the rule is to repeat one-two-five. It is my experience that the subscriber recognizes his own interpretation more readily than he does a different one. By the time he has comprehended what was repeated, it is too late to make a correction. It also relieves the operator from the mental strain of transposing the form of speaking every number called. But to continue.

REPORTING BUSY LINES.

If the called number is busy, the operator will advise the calling party, using this phrase: "Number —— is busy. Please call again." If the calling subscriber asks to be called when the line is not busy, the operator will advise, "I cannot call you. Please call later."

When a line continues to be busy for an unusual length of time, the operator will cut in and ascertain if conversation is being carried on. If she hears no voice, she will say, "Are you waiting," and if no reply is received, she will repeat the phrase after a brief interval. Then if no reply is received, she will take down the connection.

She will supervise connections to ascertain if the called subscriber answers.

Answering clearing out drops must be given preference over all other work. Upon going in on clearing out signals, the operator will say, "Are you waiting," in the same manner as before described.

When the operator becomes aware that a line is in trouble, either from the advice of the subscriber, or from observation, she will make a notation of it upon a ticket provided for the purpose, giving the information that is called for in the various spaces on the ticket.

The operator will receive complaints from subscribers and if they refer to the service she will make a memorandum on a ticket provided for that purpose, giving briefly the details with name of person making complaint.

If a subscriber insists upon talking to the manager, the request must not be denied. If the manager cannot be reached at that moment, the subscriber must be advised that the manager will call. The manager must be informed promptly of all cases requiring his personal attention.

(To be continued.)

The Contractor and the Telephone.

A contractor in Newton, Mass., building a house in which a telephone was to be installed, had this convenience placed in service in the construction shed, to await the completion of work on the house, says a writer in the Needham, Mass., Chronicle. It is proving a time saver and therefore a money maker for the builder. As most houses are nowadays equipped with the telephone, this good business idea is open to general adoption with but little trouble, and at an expense justified by the construction of even a small building.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Some Depreciation Figures of South Dakota Commission.

The rates fixed by the Board of Railroad Commissioners of South Dakota to be charged by the Dakota Central Telephone Co. at Mitchell, S. D., as based on an appraisal of the property by the commission, were published in the August 23 issue of TELEPHONY. The full decision of the commission, which has now been received, contains some depreciation figures indicating the percentages allowed the different parts of the plant and equipment. The commission introduces the subject of depreciation by quoting from TELEPHONY the recent discussion of the Nebraska Railroad Commission on the subject, following with various other citations. Regarding depreciation the commission says:

In making an allowance for depreciation of plant and equipment, it must be borne in mind that at times the distinction between what is depreciation and what is maintenance is not very clearly drawn. Depreciation is a replacement account to be used for the purpose of replacing those portions of the plant or equipment which, by reason of age, use, obsolescence, improvement of the art and similar causes, must be renewed, while maintenance has to do with the up-keep and current repair of the plant and its equipment and not to its replacement.

While the rate of depreciation of a telephone plant may not be capable of exact determination in advance, it can be estimated within approximate limits. For instance, the average depreciation is very unlikely to be more than 10 per cent. nor less than four per cent. per annum. The rate of depreciation differs in connection with different parts of the plant and equipment. For the purpose of establishing the rate of depreciation in this case, different units have been used based upon the experience of this board, the testimony introduced before it, and the experience of other boards having to do with similar questions, as shown by the following table (cents omitted):

Central office equipment	$22,473	at	7 per cent.	$1,573
Station equipment	18,174	at	8 per cent.	1,453
Pole line	9,843	at	8 per cent.	787
Aerial cable	16,184	at	5 per cent.	809
Aerial wire	3,285	at	8 per cent.	262
Underground conduit	4,434	at	2 per cent.	88
Underground cable	6,810	at	3 per cent.	204
Building	16,337	at	2 per cent	326
Garage equipment	354	at	15 per cent.	53
Tools	197	at	20 per cent.	39
	$98,094			$5,599

It will be noticed that in computing depreciation the items of $3,500 for real estate, and plant supplies $3,645 have been eliminated, and the depreciation based on a valuation of $98,094, or a total depreciation charge amounting to $5,599, making an average depreciation of 5.7 per cent. For the purposes of this opinion, therefore, the allowance for depreciation will be made on the basis of six per cent. on the total valuation of $98,094, which gives us a depreciation allowance of $5,885.

South Dakota Commission Allows Rate Increase.

There are several interesting features in the investigation recently made by the Board of Railroad Commissioners of South Dakota in the matter of the application of the Wessington Springs Telephone Co., of Wessington Springs, S. D., for permission to raise its city and rural rates. The rates charged by the company were $1.50 per month for main line business telephones; $1 per month for party line business and residence telephones and $12 per year for rural service. The company desired to increase the rates to $2.25 for business telephones, $1.75 for main line residence telephones, $1.50 for party line residence telephones (with discount of 25 cents per month on bills paid in advance), and to $18 per annum for rural service. The commission allowed the following rates: Main line business wall telephones $2 per month; main line residence wall telephones $1.25 per month; party line residence wall telephones $1.10; rural telephones per annum $16 and recommended a 10 per cent. discount for payment of city bills by the 10th of the current month and 10 per cent. on rural line bills paid quarterly in advance.

These rates were based on a careful inventory of the plant. An investigating committee reported the company to be a corporation having a capital stock outstanding of $50,150 and operating an exchange consisting of 46 main line business telephones, 18 party line business telephones, and 161 residence telephones within the city limits, as well as 285 miles of rural lines with 307 rural subscribers, the exchange doing switching service for two rural lines having 40 telephones.

The total valuation of the plant including the city and rural lines, as set forth in a statement made by the company to the commission, was $43,667, which included labor costs as agreed to between the city and the company. In contrast with this the commission investigators placed the total value new at $29,819, and as the plant had not been kept up, deducted from this 20 per cent., thus arriving at an existing value of $23,855. In order to arrive at a basis of rates the commission allows the company to earn 7 per cent. on this existing value and permits the establishment of a depreciation fund by the setting aside of 7 per cent. on the "value new." With these sums added to the operating expense the present rates would produce a deficit.

In endeavoring to fix rates that will wipe out this deficit separate statements of valuation were made for the city plant and the rural lines and separate statements of expense, and income, which show that the deficiency in revenue is largely due to the inadequacy of the rentals charged for rural service. The commission estimates that the advances in rates as authorized will put the property on a sound footing.

The opinion of the commission declares that the two all important elements in the operation of a public utility are good service and a reasonable rate therefor. Both the management and the patrons should be considerate of each others interests. After pointing out the necessity of improvement by the management in the matters of efficiency and courtesy the commissioners add:

Another material factor that operates against good service effecting this application is the carelessness of the public in the use of the telephone equipment in doing too much visiting, thereby depriving others of the use of the line even for very important matters; and the pernicious habit of some subscribers on some lines of taking down the receiver for the purpose of eaves-dropping thereby wearing out batteries and tending to destroy the efficiency of the service. This practice should cease and when a party has been discovered indulging in it and refuses to desist should with good reason be deprived of the service.

The charging of new construction costs to either the operating or maintenance account is to be deplored and the practice should be discontinued as it is nearly, if not entirely, impossible for a public utility company or ownership to so keep its accounts and make a proper and correct statement of its financial condition at any time, when called upon to do so, either for the purpose of rate making or assessment valuation. In other words, to permit a public utility to capitalize its income is contrary to public policy. Further, any company operating a public utility

should be required to keep a depreciation account and to credit said account with amount of depreciation allowed annually and all credits for salvage, etc., and to charge against same all items of expense when properly chargeable to replacement made necessary by general decay, obsolescence, change of art, etc., and said company should be required to report fully and in detail as to the credits and debits effecting said account, in its annual report to the commission.

Subscriber Need Not Build His Own Telephone Line.

Assistant Attorney General P. W. Dougherty of South Dakota has rendered an interesting opinion, which is in part as follows:

In the matter of the filing of the new schedule of rates by the Central Farmers Telephone Co., of Lesterville, S. D., I note that under the new rates filed there is an addition to the effect: "All subscribers to furnish equipment."

This change was made, or is attempted to be made, in the schedule of rates as the result of a ruling by the board of railroad commissioners and this department that stockholders and persons who are not stockholders must all be treated alike, and that it was unlawful for this company to continue its policy of making no charge whatever to its stockholders and requiring its subscribers who were not stockholders to pay rental fees for the use of telephone instruments and for telephone service in connection therewith.

The Central Farmers Telephone Co. was incorporated in South Dakota on July 12, 1907. From an examination of all the files in the case it appears that the original stockholders furnished their own telephones and their shares of stock in the company represent not only their interest in the telephone plant as a whole, but in the telephone instruments furnished by themselves as well. It is now proposed to compel the subscribers who are not stockholders to furnish their own equipment, including the telephone instruments and connections and such pole line as it may be necessary to construct to connect subscribers with the main line of the company, and there are two questions presented by this attempt of the Central Farmers Telephone Co. to incorporate such a provision in their schedule of rates: First, is it a discrimination against a subscriber who is not a stockholder to require him to furnish his own telephone instrument and pole line in order to connect with the company's main line and have telephone service? Second, may a telephone company doing business in this state require a subscriber to furnish his own pole line and telephone instruments, and then apply to the company for connection with their main line?

At the time this company was organized, it followed the practice then in vogue among all of the smaller telephone companies, of permitting the stockholder to furnish his own telephone instrument at a price for which it would be purchased by the company, and then when his share of stock was issued to him, it represented his investment in the telephone instrument and telephone line built by him, so that when the line was finally constructed, the only subscribers thereto were the stockholders, and their shares or certificates of stock in the company represented their contribution in the way of cash and property to its capitalization, and the total number of shares issued by the company represented not only its investment in the building of its toll line and its local exchanges or switches, but also the investment of its stockholders in its telephone instruments and the portions of the lines built by them.

For a number of years the company conducted its business on the basis of charging to stockholders a certain portion of the expenses of operating the plant and deriving the balance of its revenue from the rental charges for the use of telephone instruments which it furnished, and telephone service it furnished in connection therewith, to its subscribers who were not stockholders. It now seeks to compel all persons who are not stockholders to furnish their own instruments and pole line. Assuming that this is permitted and that a person who is not a stockholder becomes a subscriber to this company and he is required to build a telephone line for, say, a distance of one-half mile and furnish a telephone instrument, then at the time when he terminates his subscription—which may be three, five or seven years hence—he will have a telephone line a half mile long and a telephone instrument for which he has no use whatever; he cannot dispose of it; it belongs to him and not to the telephone company.

The investment of the stockholder in the company in his telephone instrument and line is represented by his stock, so that the the end of the year he is entitled to dividend upon his stock, and his telephone instrument and line belong to the company, whereas the telephone line and instrument furnished by the non-stockholder subscriber is his own personal property. There can be no question but that such an arrangement constitutes an unjust discrimination in favor of the stockholder and against the person who is not a stockholder. Neither may a telephone company in this state require as a condition of rendering service to the public that its intending subscribers shall furnish their own telephone line and telephone instruments up to the point of connection with the main line.

If the Central Farmers Telephone Co. may lawfully indulge in this practice, then every other telephone company doing business in this state may likewise indulge in it, and every telephone subscriber in the state may then be legally required to build his own telephone line and to furnish his own telephone instrument, and when his line has been fully constructed and his telephone instrument installed he may apply to the telephone company for connection with its main line.

The mere statement of such a proposition shows that to sustain this principle would result in a chaotic condition in the telephone business in this state. I am confidently of the opinion that no telephone company may, under the provisions of our statute, impose as a condition precedent to furnishing of telephone service that the subscriber shall furnish his own telephone line and telephone instrument, and even if such a practice were not prohibited by the statute, I am also firmly of the opinion that it should not be permitted by the board of railroad commissioners of this state.

If the rate of $5 made by the Central Farmers Telephone Co. for rural telephone service is not sufficient to enable the company to construct all of the telephone lines and to furnish all of the telephone equipment, including the telephone instruments, then the rates should be advanced to such a sum as to permit the company to make the investment, and the same rate should be paid by the stockholder and the person who is not a stockholder. Under this plan a stockholder has the advantage of the person who is not a stockholder in that he is entitled to a dividend upon his stock. It is the theory of the law, and the only theory which can be sustained, that a person investing in stock in a telephone company relies upon his investment and the dividends upon his stock for his return on the investment, and the mere fact of becoming a stockholder does not entitled him to any advantage whatever over any person who is not a stockholder.

Telephone Complaint Bureau at Cleveland.

Mayor Baker of Cleveland, Ohio, has approved the action of Public Service Director Springborn in establishing a bureau in the city hall where telephone users may record complaints against the telephone companies.

Tale of the Telegraph and Trials of the Telephone Retold

A Condensed Chronological Narrative Dealing with the History of the Telegraph and Telephone and with the Men Who Contributed to Its Success—Concluding Installment—Reproduced Through Courtesy of The Southwestern Telephone News

By George W. Foster

It is a curious historical fact that the descendants of Alfred Vail's grandfather have had more to do with the introduction and successful promotion of means of communication by the use of electromagnetism than any other family. A brother of Judge Stephen Vail was grandfather to Theo. N. Vail, whose connection with the history of the telephone is analogous to that of Alfred Vail and the telegraph. Theo. N. Vail was "first cousin, once removed" to Alfred Vail. He was about 13 years old when his elderly cousin died.

Herbert N. Casson, in his "History of the Telephone," published by A. C. McClurg & Co., says that Theodore imbibed at his mother's knee, in the shadow of the Speedwell iron works, the dramatic story of the invention of the telegraph, and that his boybood playthings were of a character to teach him the art of telegraphy. That he became a practical telegraph operator is told by others who knew him on the Union Pacific Railroad. He first tried farming in the Middle West. This occupation not bringing results soon enough to his liking, he resorted to telegraphy, but soon found more congenial work in the railway mail service. It was there that he developed his unusual ability in organization. He soon arose to the position of assistant superintendent and in this capacity so improved upon the old methods as to attract the attention of Gardiner G. Hubbard, who afterwards became Alexander Graham Bell's father-in-law and one of the chief promoters in the early introduction of the Bell telephone.

The Earliest Type of Bell Telephone Sets.

When the demand for telephones became brisk, he thought of the young assistant superintendent of the railway mail service in Washington and sent Bell's assistant, Mr. Watson, to interview him as a possible candidate for the position of general manager of the Bell company. Hubbard had met Vail while exercising his authority as head of a commission, appointed by President Hayes, on mail transportation, and was aware of what he had accomplished in the railway mail service. Watson's report was entirely favorable, and Theo. N. Vail began his labors of placing the telephone on a business basis in 1878, at a salary of $3,500 a year.

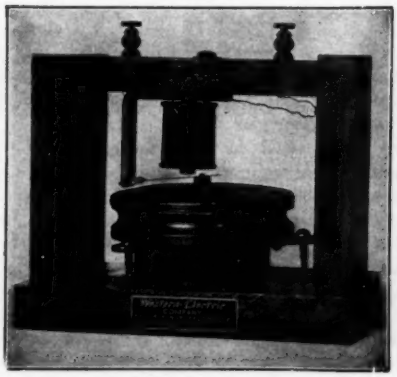
At some time prior to this appointment, the telephone patents had been offered to the Western Union Telegraph Co. for $100,000 and were refused. President Orton, at that time, designating the invention as a useless toy. But now, Mr. Orton was moving heaven and earth to down the Bell invention and to substitute one his company could control. The young general manager of the Bell company therefore had a job cut out for him, such as required the utmost skill, patience, resourcefulness, and belief in the unquestionable strength and validity of the Bell patents.

Against the unlimited financial resources of a corporation that covered this continent with a network of telegraph wires, Vail had the backing of but a few men, who, like himself, believed in the legality and soundness of the Bell patents and strove to inculcate that confidence and belief in the minds of others who were beginning to be intimidated by the greatness in size, and financial strength of their suddenly active opponent. Then came dark days. Every move called for the expenditure of money and there was little coming in. Vail's salary was in arrears. Professor Bell was home from his wedding trip abroad, where he had not been successful in securing capital, and was calling for funds to live on. Watson was lending such sums as 20 cents to Hubbard and bemoaning his inability to have beer with his lunches, while Sanders, who had furnished all the money, so far, was beginning to see the end of his tether.

The Western Union company felt pretty sure of its victim and was encouraging Gray, Dolbear and others to put forward their claims. Thos. A. Edison's carbon transmitter and his pony crown receiver furnished a telephone set superior to the magnetos of the Bell people and they were establishing telephone exchanges all over the United States. Vail was offered a higher salary and less work by a railroad company, but he refused to budge. Emil Berliner had patented a transmitter of variable contact a few months in advance of Edison and Francis Blake so improved upon this, as to turn out an instrument superior to Edison's and at the psychological moment turned it in to Vail's company and took his pay in stock. This put the Bell company in good fighting trim and the aspect of affairs under Vail's aggressive management began to take on a much rosier hue.

In the fall of 1878 the Western Union company had introduced Elisha Gray as the first inventor of the electric speaking telephone and took legal action against the Bell company for

infringement. The great telegraph leviathan expected this move would bring the Bell telephone group to speedy terms, but the case lasted for a year and then came suddenly to an end. Franklin Leonard Pope, chief electrician for the Western Union company, after an exhaustive investigation, lasting some six months, had reported that the Bell patent was valid. But it required the secret advice of the company's chief attorney, a competent lawyer, to bring Mr. Orton, the Vanderbilts and the forty millions of telegraph capital to the Bell headquarters to ask for a compromise. The settlement of this suit between the giant corporation and the small but sturdy Bell telephone group was one of the greatest and best pieces of good policy ever displayed by such eminent financial generals on the eve of a great and decisive legal battle.



The First Bell Telephone.

Bell's Invention.

The right was on the side of the Bell claims, but unlimited capital and resources were against them. The settlement of all differences between these well armed opponents and the surrender of the telephone field to Mr. Vail's company was one of the most efficient displays of business acumen ever before exhibited by strong rivals and the Bell Telephone Co. had reason to suppose its legal troubles were over.

The stock of the Bell company soared skyward. It took up 56,000 telephones in 55 cities and the telephone at once assumed a place high up among the necessities of civilization. But that its patent troubles had just begun soon became apparent.

During the first seven years of its life the Bell patents had to be defended against 600 infringers. Finally, in 1887, the Supreme Court of the United States decided five crucial cases, including the others of lesser note, entirely in favor of the Bell patents, against every infringer.

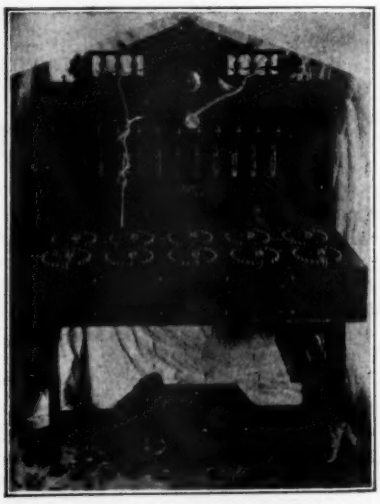
One of the most stubbornly contested claims against the priority of the Bell invention was that Phillip Reis, a German school teacher of Frankfurt, invented the first telephone. This defense was set up in every important suit brought by the Bell company for infringement and the ingenuity displayed by the attorneys in their strenuous efforts to show to the courts that Reis and not Bell was the first inventor of the telephone required a kindergarten of electricity, magnetism and acoustics in every court room where a case was tried.

This claim will be treated a little more at length further along, for the reason that a very recent writer has pretended to believe the Reis claim was well founded. When the entire telephone equipment of the Western Union Telegraph Co. came into the hands of General Manager Vail, he found himself possessed of a medley, or motley mess of telephone apparatus that probably suggested to his active mind the idea of a menagerie. There were nearly as many different kinds of equipment as there were number of telephone exchanges. Every telephone exchange manager had exercised all of the inventive genius he possessed, or could find in his neighborhood, and every such exchange was an independent storehouse of indescribable junk. The Western Union managers were, perhaps, not quite so prolific in adopting homemade devices as the Bell men had been, their necessities not being so great, but when the two systems were combined there must have been such a multitude of instruments as to confuse the most expert electro-mechanician—if there had been any such.

In addition to the task of assigning territory and providing apparatus for an army of applicants for license contracts from every part of the American continent, the busy general manager of the Bell company must devise some practicable way to attain uniformity of apparatus and methods throughout the entire country. This was the task for a genius in organization.

In 1869 Elisha Gray and Enos M. Barton were owners of a small factory in Cleveland, Ohio, for the manufacture and repairs of electrical goods. General Anson Stager was general superintendent of the Western Union Telegraph Co. and he offered to take a third interest in the firm, provided Gray and Barton would move to Chicago, which was promptly done. A small concern was bought up in Chicago and, thus strengthened, the firm continued until 1872, when the Western Union company took a third interest. It turned in its Ottawa, Ill., instrument shop as part payment and the factory became known as the Western Electric Mfg. Co.

A Williams Switchboard.



Combination Grounded and Metallic Switchboard.

As soon as the telephone became an important factor in the electrical field, the Western Electric Mfg. Co. made the Gray, Edison and other machines for the Western Union Telegraph Co. and its business required larger quarters. The Western Union turned over its New York factory to the Western Electric Mfg. Co. early in 1879, and fierce competition was waged

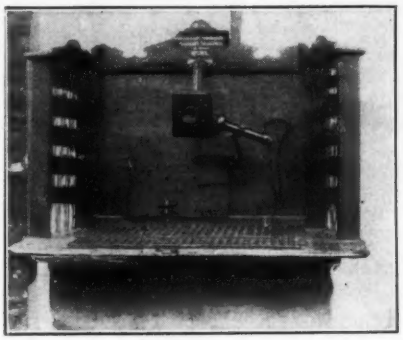
against the Bell Telephone Co. This all ended in the fall of the same year and the Western Electric Mfg. Co. suddenly lost its telephone manufacturing business.

Charles Williams, E. T. Gilliland, Post & Co, and Davis & Watts were licensed manufacturers for the Bell company, but their combined capacity was insufficient to supply the Bell demand and the Western Electric Mfg. Co. was given a hand in the job before the end of 1880.

This situation gave Mr. Vail the opportunity he wanted to organize a manufacturing concern which should turn out instruments for Bell licensees as fast as they were needed and, as far as was practicable, conform to fixed standards and uniformity of design. To accomplish this result, negotiations, which finally succeeded, were started with Jay Gould to obtain from him the Western Union stock in the Western Electric Mfg. Co. The Bell Telephone Co. became owner of the majority of the stock and the name of the concern was changed a trifle and became the Western Electric Co., which it still bears.

One may be pardoned for hesitating for a moment at this juncture, for the purpose of taking a mental survey of the field, in an attempt to recall the view as it must have appeared to the mind's eye of Theo. N. Vail, in the beginning of 1882.

By this time the telephone properties of the Western Union company had all been transferred to the Bell telephone licensed companies throughout the United States and the task of combining competing exchanges and attempting to harmonize various different kinds of equipment was busily under way. There were in use four well known types of switchboards, Utica, Gilliland, Western Electric and Williams. How many other kinds, no man knows. There were five well known types of magneto bells, Post, Davis & Watts, Gilliland, Williams and Western Electric, each having several different forms and sizes and all turning out improvements almost monthly. There were also various and sundry other signaling devices invented by licensees, managers and more capable electricians throughout the vast territory covered by the Bell Telephone Co. The licensees were furnishing their own money and spending it for such equipment as suited them best and there were no two telephone exchanges in the whole United States that were equipped exactly alike in every particular. There were scarcely two switchboards, turned out by the same maker, which were exact counterparts of each other.



One Form of a Gilliland Board.

First Arrangement of Blake Transmitter and Bell Telephone.

It will be seen that such a condition of the field presented difficulties seemingly unsurmountable to obtaining anything approaching uniformity of methods and standardization of equipment, and yet, when Mr. Vail wrote to one of his captains in 1879 the letter that follows, just such uniformity and standardization must have seemed to him imperative:

"Tell our agents," he wrote, "that we have a proposition on foot to connect the different cities for the purpose of personal communication, and in other ways to organize a grand telephone system."

At that time there wasn't a telephone line in the world that connected two cities.

Four months later he encouraged Charles J. Glidden, of Lowell, Mass., to build such a telephone line from Lowell to Boston. This was done, and the venture was a success from the start. Many years were required, however, to make any appreciable headway in attaining uniformity of methods and apparatus. The growth of the business was so great and new and improved methods and equipment for handling it followed each other so quickly, that the choice of a standard was simply impossible. It isn't so easy even unto this day. But great strides were taken in the proper direction during Mr. Vail's first management of the affairs of the great utility, and since his second control of the business, the forward movement has assumed almost the appearance of a revolution. Probably no other living man ever conceived the idea of making the greatest telegraph system in the world a factor in the business of the greatest existing telephone system, but when his plans along this line have been developed and brought into into effective working order, the advantages to the users of the telephone and telegraph cannot fail to be plain to everybody. Its convenience is already felt and understood, even in this, its earliest stage of experimentation.

Unfortunately, nothing human is perfect and human nature has, perhaps, the least claim to perfection. There are always skeptics and unbelievers, and occasionally we encounter a nature so irreconcilable that no weight of proof can shake its ill-conceived opinions. One of these has but recently found space in a metropolitan daily to air an adverse opinion of the Bell Telephone Co. and to revert to the old Reis spook. But for the multitude of young men growing up in the business, who have had no chance, and now can spare no time to investigate such unfounded statements, there would be nothing gained in denying them, and producing the proofs of their falsity. But there should be no doubts left lingering in the minds of youth concerning the absolutely honest and unquestionably sound foundation upon which the great telephone structure has been erected—the original patent of Alexander Graham Bell.

No claim of any inventor had ever before, or has ever since, been subjected to such a fierce spotlight of investigation, and exhaustive legal inquiry. The Morse invention with its sixty-odd infringers sinks into insignificance when compared with the six hundred, which, like a swarm of locusts, attacked Bell. The reason is that the Bell invention was covered by the most valuable single patent ever issued. Enos M. Barton is credited with saying of his former partner, Elisha Gray, "Of all the claimants who did not invent the telephone, Gray was the nearest."

The irreconcilable person referred to was a writer in the New York Evening Journal of September 17, 1912:

"And the hundreds of millions the telephone company has earned and the fourteen thousand millions of messages sent in this country last year are all due to the fact that Bell, the inventor, turned a little screw in a certain direction a thousandth part of an inch. But long before the days of Bell, Reis, the

(Concluded on page 44.)

Railway Telephony—Practical Points in All Branches

A Regular Department Which Appears Semi-Monthly—Scope Includes Principles of Construction, Testing, Operation and Maintenance—Columns Open for Contributions on Matters of General Interest to Those Engaged in This Branch of Telephony

General Application of Railway Telephone Selective Signaling Circuits.

By John A. Kick.

Train dispatching and way message circuits are in general use throughout the country. Many railway divisions no longer have way station telegraph service. Improved selector equipments have opened up a new field. Selectors can be used for signaling on long commercial circuits used by railways. Their use means improved transmission in addition to more positive ringing.

Assume that a pair of No. 8 iron wire, 100 to 125 miles long is available for a commercial circuit. It is known that the transmission from terminal to terminal would likely be acceptable but that the ringers at each terminal would represent a small transmission loss. In addition to transmission loss, some difficulty would be found in ringing with the generator, regardless of its power, especially if either or both terminals had more than one office.

Selectors can be used on such circuits to good advantage if the selector bridge is provided with sufficient impedance to prevent transmission losses.

The current requirements for signaling are not prohibitive and terminal situations can be arranged to prevent complete duplication of signaling apparatus. The method depends upon the terminal layout, but remote control of one signaling unit can usually be arranged. Selectors can be used to advantage on terminal dispatching and yard circuits with intercommunicating features if desired.

On long busy commercial circuits of a large number of intermediate stations, the terminals and the more important way stations can be effectively signaled by selectors, while the stations of lesser importance can remain on generator code ringing. The gains include speed of call to the busy stations; improved transmission to all stations; less code ringing with more prompt answers by reason of less confusion of signals; full use of the circuit; greater number of stations allowable on the circuit, etc.

Message circuits can be made intercommunicating by a simple method of remote control of the main office signaling apparatus. By the remote control, the way station is provided with a means of closing to ground a simplex bridge a number of times, dependent upon the number of the station to be signaled. At the main station the simplex circuit is taken through a relay and battery to ground. The local circuit of the relay controls the main signaling apparatus just as does the main office signaling key.

The way station simplex bridge may be considered as existing in the way station selector, so that a tap taken out of approximately the center of the bridge and to ground through the universal or other signaling control key, will serve the purpose economically. Message circuits can be arranged to signal from both terminals where there are requirements for such service. Frequently way message circuits are used by both terminals to a considerable extent. To prevent either requiring the other to do all the calling, each can be provided with full signaling equipment.

On way message circuit used as one side of a phantom circuit, the double signaling is possible either by direct or remote control of the signaling apparatus. Where a way message circuit is a physical unit of a phantom and in addition is to be telegraphed over, then remote control or intercommunicating is not practical. Way message circuits not used in a phantom circuit, can be arranged for intercommunicating either completely or in part and by remote control.

For selectors having straight stepping selection, the means for arranging remote control for intercommunicating signaling service are extremely simple, while for the other types the means cannot be said to be complicated although more expensive.

On double track railways, selectors can be and are now used to control "head in" signals at sidings. This service will soon be so well beyond the development stage as to be generally applied.

Grounded telephone lines can be greatly improved both in transmission and in signaling by applying selectors. There does not appear to be any good reason for failure to apply the standard railway selector to commercial circuits either on railways or in large industrial plants.

Selective systems are now on the market for monitor service in industrial plants, that is, a means of locating officials to answer any summons. This is accomplished by sending out a series of signals previously designated as the call for a certain person. The signal is given at a number of places simultaneously, with the result that an official, who may be at any point in the plant, will immediately call in from the nearest telephone. This system can be used to an advantage in a railway shop to call an official, or in the yard to call the yard master.

Any application of the selector which eliminates code signaling is to be recommended, and at the same time any application which means time saved, means money saved.

Analytical studies of the system will frequently point the way to an application which will represent an acceptable investment.

Wireless System of Railway Telephony and Telegraphy.

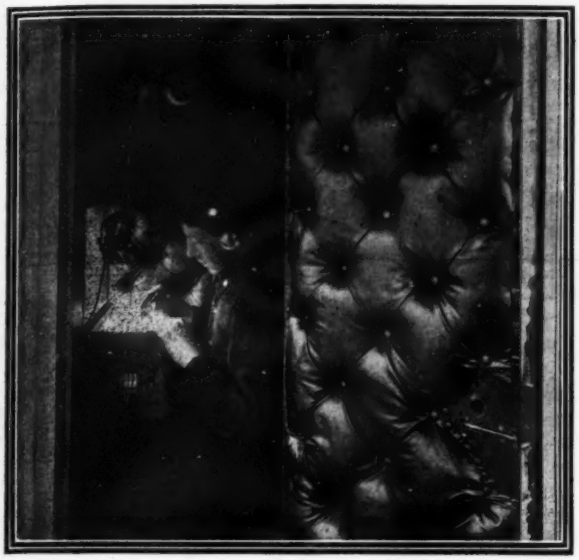
By Frank C. Perkins.

There are now well understood principles of electrical intercommunication by means of metallic cable circuits between two fixed stations, and by means of etheral waves between two moving objects, such as ships at sea. It is pointed out that both of these systems owing to the highly efficient instruments invented during the last 30 years by Prof. David Edward Hughes, Dr. Alexander Graham Bell, Sir William H. Preece, Sir Oliver Lodge, Signor Guglielmo Marconi, and many other scientists, have reached that perfection necessary for a successful and practical application.

Until recently, however, neither of these principles nor the existing instruments, have been applied with any degree of success for the establishment of reliable intercommunication under modern conditions between railway trains in motion, or trains and stations, for which purpose an arbitrary code of primitive mechanical signals is still employed, augmented here and there by standard electrical apparatus adopted from recent developments in other branches of electrical engineering.

In an experimental installation H. von Kramer, an electrical engineer of Witton, near Birmingham, England, succeeded in establishing a telephonic link between an express train and a signaling box at Three Bridges station on the London, Brighton & South Coast Railway. He employed the principle of electric induction between apparatus carried on board the train, and a copper cable embedded in the earth several feet away, parallel with, but outside of the permanent way.

The first public installation of von Kramer, called "Railophone," was at Stratford-on-Avon, on the Stratford & Midland Junction Railway. He then also announced the possibility of using the railophone system, in addition to the transmission of telephonic or telegraphic messages, for



The Railophone Operator and His Sound Proof Booth.

sending signals to and from trains and stations, with the object of controlling trains and safeguarding them against collisions.

The equipment for the establishment of telephonic communication between a moving train and a station, consists of a telephone transmitter and a pair of receivers in the form of an operator's headgear, fixed in a soundproof telephone box, carried in the guard's van of the train. These instruments are electrically connected with two large insulated copper coils mounted in a wooden casing, called "the railophone frames," suspended by iron brackets from the coach. The upper frame is suitably wound for sending, and the lower frame for receiving a telephone message. It is pointed out that the telephonic current produced by the voice of the operator, create a magnetic field which waxes and wanes in unison with the alternations of the voice. This field, emanating from the railophone upper frame, induces an electric current of corresponding periodic pulsations in the metallic conductor buried in the earth alongside the railway track.

It is stated that this ground wire is connected to similar telephone instruments installed at stations and, if desired, may be linked up with the general telephone and telegraph system of the country. Telephonic conversation is carried on through the railophone just as through any ordinary telephone, no switch for changing from sending to receiving being required.

It is maintained that there is no mechanical contact between the ground wire and the moving train. The connection is "wireless" or more accurately described as wireless inductive, the telephonic current being transmitted through the space which exists between the ground wire and the lower frame on the passing train. Inversely, telephonic currents inductively imposed upon the ground wire by the upper train frame, are picked up at the stations by telephone head receivers.

In the original railophone system, there was no means of "capping up" and, as is still the case with radio-telegraphy on board ship, the railophone operators had to be in constant attendance. It is claimed that this shortcoming has recently been rectified by the introduction of a highly sensitive detector, the joint invention of H. von Kramer and Dr. Gisbert Kapp. By the aid of the detector, which corresponds to a "coherer" in wireless, the exceedingly feeble electrical impulses received on the train from a vibrating charge sent into the ground wire, are picked up and relayed into sufficiently strong currents to ring a calling bell, or sound a powerful howler. The ringing of a station from a moving train is effected by the same means. The train telephone enables guard and signalman to communicate with each other, whether the train is in motion or at a standstill.

The railophone is also used as a train telegraph. With slight modifications to the system used for telephony, and by the addition of telegraphic instruments, the railophone can transmit telegraphic signals. It is said that on the Stratford & Midland Junction Railway, either mode of communication, telephonic or telegraphic, is employed, without necessitating the use of change-over switches. Particular attention is drawn to the fact that with the railophone system of combined telephony and telegraphy, the sending operator can be instantaneously interrupted, a not unimportant feature in railway work in cases of emergency.

A. I. E. E. Affairs.

The September Proceedings of the American Institute of Electrical Engineers reports that the following telephone men were elected associates of the Institute: Thomas R. Fowler, superintendent of construction, Kinloch Telephone Co., St. Louis, Mo.; John J. Gilbert, manager export department, Western Electric Co., Brooklyn, N. Y.; Edward N. Ridley, telephone salesman, Northern Electrical & Mfg. Co., Vancouver, B. C.; J. S. Thompson, traffic inspector, Bell Telephone Co. of Pa., Wilkesbarre, Pa.; Frank Toohey, patent attorney, Western Electric Co., Antwerp, Belgium, and Frank G. Whitney, wire chief, Pacific Telephone & Telegraph Co., Los Angeles, Cal.

The committee on telegraphy and telephony for the ensuing year is comprised of the following members: F. F. Fowle, chairman, New York; M. H. Clapp, St. Paul, Minn.; E. H. Colpitts, New York; M. M. Davis, New York; S. P. Grace, Atlantic City, N. J.; A. H. Griswold, San Francisco, Cal.; L. S. Keith, Chicago; S. G. McMeen, Columbus, Ohio; Cloyd Marshall, New York; William Maver, Jr., New York; Samuel Reber, New York; F. L. Rhodes, New York; J. L. Wayne, Indianapolis, Ind.; C. S. Winston, Chicago; and G. M. Yorke, New York.

Report of Saskatchewan Government Telephone System.

The government telephone system of the province of Saskatchewan, Canada, expended $1,526,755 during the year ending February 28, 1913. The gross income amounted to $392,393. During the year construction was done as follows: New toll offices, 46; new exchanges, 34; pole miles, long distance, 516.22; wire miles, long distance, 3,766.8; and service was extended to 4,288 new subscribers during the year, making a total of 9,850 subscribers now being served. In addition to the government system there are, in Saskatchewan, 251 rural telephone companies, 22 Independent companies and five municipal telephone systems.

Largest Directory in the World Has Fewer Pages.

The Chicago Telephone Co., thr ugh the adoption of a four-column arrangement for alphabetical listing pages, has reduced the size of its directory from fourteen hundred to twelve hundred pages. This directory, containing both alphabetical and classified business sections, is the largest in the world.

Practical Subjects—Letters and Discussions

Induction and Repeating Coils.

By A. W. Clement.

The writer has noticed that many telephone men throw up their hands in more or less despair when tackling any troubles in repeating or induction coils, and it is the purpose of this article to give them a hand, by presenting the principles involved in as simple a manner as possible. There is a general understanding that people can talk through the coils, but just how is more or less of a mystery to many. In the first place induction and repeating coils are practically the same things, and what is said about one will apply to the other, unless otherwise stated.

If a receiver be connected across a relay, or any kind of a magnet coil; placed near another coil, and the battery be sent through that other coil, a good, sharp click will be noticed both when the battery is put on and when taken off, but most loudly when opening it. The click will be loudest in both cases, when the windings of both coils run in the same direction, or are parallel, and when nearest to each other. The layout is shown in Fig. 1-*A*. Those who have never noticed the effect, the writer would advise to try the experiment, simple as it may seem. A good knowledge of what actually happens and how much, is of great assistance in tackling cross talk troubles and the like, besides helping to prevent many cases.

In Fig. 1-*A*, *S* is the coil that is connected to the receiver, and *P* is the one, battery is put through, the battery being opened and closed at *X*. There must be no metal covers on the coils, or the induction will be killed. What is had here is an induction coil or repeating coil where *P* is the primary of the induction coil, being the first considered because it starts the action. The secondary is *S* and is considered second because it receives the "kick" from the primary and passes it on out on the line, trunk, cord circuit, or elsewhere.

In regular use a transmitter somewhere in the primary circuit gives the variations of current that were made in this experiment by making and breaking the circuit at *X*; in fact if a transmitter is placed at *X*, one could talk through from one coil to the other. The primary, *P* placed across a busy circuit, leaving out the battery, enables one to hear the conversation that is going on. The voice currents in the line are partly shunted into *P* and cause about the same effect that the transmitter did. The layout of this circuit is shown in Fig. 1-*B*.

Ringing current may also be used in the primary, and it will be induced into the secondary, as were the talking currents, because both are alternating currents—the ringing being much slower in its alternations than the talking, and also much simpler.

In general it may be said that any changing current in

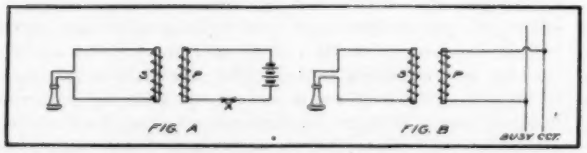


Fig. 1. Circuits Illustrating Induced Kick and Induced Talk.

the primary, will induce a similarly changing current in the secondary. The strength of the secondary current, however, depends largely upon the speed and amount of change of the primary current, and also upon the winding and arrangment of the coils. For example: the human voice, on the average, causes the primary currents to change in strength about 400 times a second, this being called the frequency. Assume that with a certain coil, there is a transmission or current loss of 10 per cent. between the windings when talking through it. If a ringing current be sent through the coil, the loss of ringing current will be much greater, as the ringing frequency averages about 18 alter-

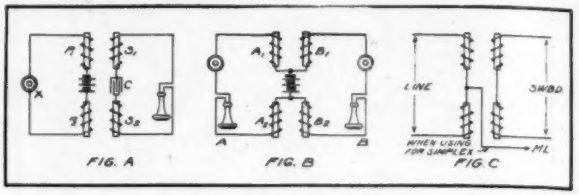


Fig. 2. Trunk, Cord Circuit, and Magneto Repeating Coil Circuits.

nations per second. There would be more current in the secondary when ringing than when talking, because the primary ringing current is so much stronger than the primary talking current.

The induction coil is used mainly for starting out voice currents, as they might be called, such as from subscribers' sets, operators' sets, etc. It is usually wound so that the secondary voltage is much higher than the primary, as a high voltage will carry much further on a long line than a low voltage. Also by having the iron core open, there is a poor magnetic circuit, which results in the two windings being coupled together loosely, an advantage not necessary to go into here. When intended for use in a local battery set, the primary resistance is usually made very low, about ¼-ohm, so that out of the whole circuit, the transmitter may have the most resistance. This results in larger changes of current, and of course, better transmission.

In a repeating coil the core is formed in the shape of a circle, a square, an oblong, or in some way so that there is no air gap in it. If the two coils of Fig. 1-*A* be placed side by side, and then a piece of iron put across each end, a rough repeating coil would be had. As the strength of induction depends upon magnetism in the core, and the magnetism upon the core being continuous and large, placing on the iron ends helps to make the cores continuous, and so gives a better coil for "repeating." In this form the windings are said to be close coupled.

There are many styles of repeating coil windings, the differences being mainly to cover different kinds of circuit wiring. Fig. 2-*A* shows a simple style frequently used on trunks. Here are practically two induction coils in series, with battery between the primaries, P_1 and P_2, and a condenser *C* connecting the secondaries, S_1 and S_2. A subscriber's set at *X* varies the current through the primaries. The secondaries pick up the induced currents and pass them on over the trunk, and eventually to the other subscriber's receiver. It would be possible to talk a little better if the condenser were replaced with a strap wire, but it is shown here because it is usually cut in for signaling purposes, which need not be dealt with in this article.

In Fig. 2-*B* is shown the usual type of cord circuit repeating coil. Here it would be impossible to call either winding the primary or secondary, unless considered while conversation is being carried on in one direction only. For instance, if *A* talks to *B*, then A_1 and A_2 are the primaries, and B_1 and B_2, the secondaries; if *B* talks to *A*, then the winding names are reversed. For the reason that

the coils have to supply battery to both subscribers, in other words be primaries to both, and also secondaries to both, the windings are all made exactly alike, both for resistance, and for the number of turns of wire.

Fig. 2-*C* shows a type that is commonly used on magneto circuits, and for telegraphing on toll lines, or any circuit not having ground or battery on it. This is practically the same as Fig. 2-*A* with the battery and condenser omitted. For just straight telephoning, wire *ML* is omitted. When using for telegraph purposes, it is brought to the sets and treated as though it were an ordinary line wire, another coil similarly connected being at the other end of the circuit to furnish the other end of the "simplex" wire.

Trouble in most coils is rather rare but it does creep in once in awhile. It is noticeable by loss of transmission, or noise, especially when connected to a long line. Quite a few coils are found, however, that are connected wrongly. For instance, in one office where there were repeating coils in the toll cord circuits, they were found to be connected as in Fig. 3, which resulted in considerable loss. The mistake was easily made, due to the manner in which the terminals were placed.

While more properly belonging to testing, yet it will not be amiss to mention here a few methods of testing coils. If the wiring checks O. K. according to the print, then the simplest way is to put in another coil, using one from another circuit, if lacking a spare one. This is not a technical way of testing, but it is the most practical. If replacing the coil clears the trouble, then test for insulation between all the windings, opening any straps on the terminals.

If any crosses show up, coils that are soaked in an insulating compound will generally have to be discarded although a good heating by sending about one ampere through all the windings in series will occasionally clear them. If lacking an ammeter, the current may be measured by putting 55 feet of any No. 22 gage copper wire in series with the coil, and then putting enough current through, so that a voltmeter across the wire will give a one-volt deflection. With this arrangment every volt shown on the meter scale, would mean an ampere through the wire, no matter to what it might be connected.

Coils that can be gotten into, can often be cleared by connecting a receiver and battery from either terminal of one winding in trouble, to either terminal of the one crossed with it. Poking around inside with a pin and tapping the coil will frequently jar the cross loose, causing a noise in the receiver. It is then just a matter of judgment as to what can be done. Windings that are partly shorted in themselves can be worked with, in a similar manner, by placing the receiver across the winding with fairly heavy battery across them both. If using dry cells, place about five or ten ohms in series, the primary of an induction coil serving, if no other resistance is available.

Occasionally a winding is reversed at the terminals. This

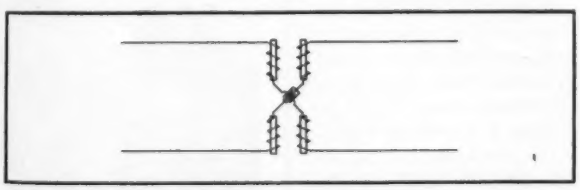


Fig. 3. Example of Improper Wiring of Repeating Coil.

may be found by reversing each winding, one at a time, until the transmission is brought to normal. The ones that are all right will decrease the transmission, when reversed, and so can be put regular before trying the next.

Other possible cases can be handled, if the principle of action is remembered.

How to Read Trade and Technical Journals.

TELEPHONY has taken the liberty of extracting some morsels from an article bearing this title, written by R. R. Shuman, for "Advertising and Selling," and if, under the circumstances, there is a trifle of advertising bias, it is only natural. Had it been written in TELEPHONY'S office, the word "telephone" would naturally have been used wherever possible, and perhaps a little emphasis added here and there, but the selections are quoted verbatim.

Nevertheless, the truth of the statements in their concrete application, as well as in the abstract, will be apparent to readers; and TELEPHONY suggests that much good may be done if readers will direct to this article, the attention of such of their telephone acquaintances, colleagues, and subordinates as may not, in their opinion, be finding all the "gold" that is theirs to take and store each week from the columns of TELEPHONY. Some of the things Mr. Shuman said are:

There is so much gold in both the advertising and text pages of trade and technical journals that it is a pity so few subscribers really know how to appropriate it to their own uses. Mr. Tupper.....told how he had begun subscribing for engineering and machinery journals while he was a student at the state university, and not only reading them from cover to cover, but clipping and classifying the ads and text matter.

His method was to mount the clippings on letter-size sheets of paper, and to secure these sheets in ordinary post binders, providing a separate binder for each subject, one for boilers, one for engines, one for motors, one for lathes, etc. Said he, in effect: 'I soon discovered that there was more real, boiled-down, practical information in the ads than in the editorials, for each advertiser naturally emphasized the differences between his product and the rest!

When I go into a man's office and see his trade and technical journals unopened, I turn hot and cold with indignation. To my mind, the privilege of having brought to his desk, weekly or monthly, the boiled-down information practical to his craft, is a boon that every man should cherish.

I would find on the desks of the presidents and general managers of great institutions, copies of the leading journals of that industry, interlined, pencil-marked and full of marginal notations. Then I knew why it was that clerks remained clerks, while other men grew to be managers and partners and proprietors.

Every technical journal in every field, gives vastly more value in each issue than the price asked for a year's subscription, and some give ten-fold, even a hundred-fold. They reveal to the little, struggling manufacturer in a prairie state, ideas and improvements, methods and devices that have cost some man, or institution, in England, France, Germany, or America, years of time and a fortune in money to develop.

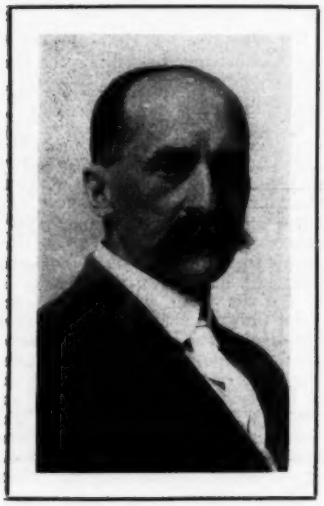
Both trade and technical journals are being read more religiously today than they were yesterday, because they are becoming daily more worth reading. This is especially true of the advertising pages, because men who buy space are rapidly learning that they are buying not only space, but the attention of a multi-million-dollar audience.

Three kinds of men are making money out of the specialized journals of the day: The publisher, and he works the hardest and gives the most for every cent he gets; the advertiser, who has the easiest and surest reward; and the subscriber, who, in the last analysis, is the man for whom the paper is published, and the man who pays the least and gets the most.

TELEPHONY has no fault to find with its subscribers, although aware that many are perfunctory in their reading and haphazard in their filing; it has no complaint as to the number and class of its readers and advertisers; and is entirely satisfied with its position in the telephone world and the world at large. Nevertheless, it is always on the alert to enlist new subscribers and to secure desirable advertisers; always glad to have the paper read, even by those who do not subscribe; and always *particularly* anxious to have its columns *gleaned*, with the best results to all concerned. That is why the foregoing excerpts have been quoted, giving them the stamp of approval, and expressed the hope that they may inspire many readers to allow no more of the gold to trickle through their fingers.

A Quartet of Men Prominent in the Telephone Field

JAMES C. JOSLYN, secretary, treasurer and general manager of the DeKalb County Telephone Co., Sycamore, Ill., was born at Sycamore in April, 1862, and was educated in the Sycamore high school. He was a retail merchant in the book and stationery trade in Sycamore for 21 years.

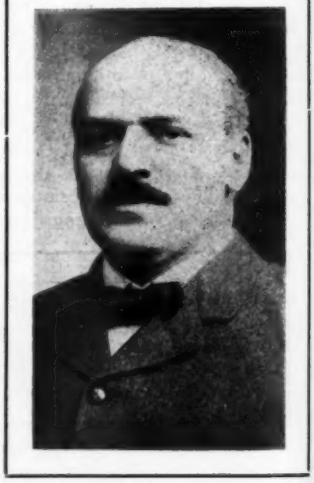


He sold out this business on April 1, 1912. He has been connected with the DeKalb County Telephone Co. since its organization in May, 1895. Two years later, in January, 1897, he was made a director of the company and was elected secretary, treasurer and general manager. At the time he assumed the management the company had but one exchange in Sycamore. Since that time the lines have been extended to all the towns in the county, and a total of 13 exchanges have been established. The company has reached a development in its territory equivalent to one telephone for every six inhabitants. The city of Dekalb heads the list with 1,600 telephones. Other exchanges are located at Malta, Lee, Shabbona, Waterman, Hinckley, Genoa, Kingston, Kirkland, Fairdale and Maple Park.

GEORGE MURPHY, wire chief and superintendent of the Greenville Home Telephone Co., Greenville, Ohio, was born at Greenville in February, 1883, and attended the public schools of that city. He entered the telephone field in September, 1899, at the time the Greenville Home Telephone Co. was building its plant. He began at the bottom to learn the business, starting as messenger boy and installer, after which he was given a place on the construction gang. He left this work and went to "shooting trouble," continuing in this capacity for three years and seven months, when he was made foreman of the construction gang. He then had charge of the cable work and served as superintendent, building five exchanges, installing 17 city boards, two toll boards and three farm boards. In 1908 he was made wire chief. Mr. Murphy was a stockholder and a member of the board of directors of the Rossburg & New Weston Telephone Co. until that company was taken over by the Greenville Home Telephone Co. He is city electrician and assistant fire chief of Greenville.

E. H. MARTIN, owner of the Martin Telephone Co., Webster City, Iowa, was born in October, 1867. He began as a telegraph operator for the Illinois Central at the age of 12 and afterward worked in capacities of operator, station agent, switchman, conductor, fireman, engineer and train dispatcher on various railroads until 1893, when he went into the telephone business. He built at Webster City what is said to have been the first Independent telephone exchange in operation after the expiration of the basic patent. Later, when he could not secure Bell toll line connection at a profitable rate, he established successful toll lines, using the top wire of fence along the Illinois Central right of way, to Williams, 15 miles east, and to Duncombe, 9 miles west, of Webster City. These lines received much publicity and were removed for being in violation of the Western Union's railroad contract. Mr. Martin promoted the Iowa Telephone Association in 1895 and was its first president. He is arranging to incorporate a $5,000,000 company to market a telephone meter of which he is the inventor.

H. E. PROCUNIER, president of the Moon Manufacturing Co., Chicago, was born at Port Rowan, Canada, in January, 1846, and attended the public schools. At 17 he entered the employ of the Sells Mfg. Co., prominent Canadian engine manufacturers, and served a four years' apprenticeship. He became superintendent of outside machinery for Gurney, Russell & Co., of Dundas, Canada, and then went with the Jenks Marine Engine Works, of Port Huron, Mich., leaving that position to finish his studies at the Chicago Athenaeum. He afterward engaged in the manufacture of engines and then served successively as superintendent of machinery for the Blower Watch Case Co., assistant master mechanic of the St. L. A. & T. H. R. R., master mechanic of the St. Louis Ore & Steel Co., general master mechanic and master ship builder of the G. T. & C. G. R. R., superintendent of boats for the Consolidated Coal Co., St. Louis, and later of the American Watch Spring Co., Chicago. In 1894 he organized the Magnetic Telephone Co., and became interested in other Chicago enterprises.



Nebraska Commissioner Files Dissent in Lincoln Rate Case

Commissioner Hall Who Differed from His Two Colleagues on Nebraska State Railway Commission in Case Raising Lincoln Rates Files Dissenting Opinion—Holds Serious Blunders Were Made- Unit Prices of Engineers Declared Too High—Overhead Allowances Especially Criticized

Commissioner T. L. Hall, of the Nebraska State Railway Commission, has just filed a lengthy dissenting opinion in the case granting an increase in rates to the Lincoln Telephone & Telegraph Co. in Lincoln, Neb. The majority opinion in this case was published in TELEPHONY of July 19.

Commissioner Hall assails the majority finding, first, because, as he alleges, the commission permitted the company to issue over $4,000,000 worth of securities from the inception of the company down to the request for a raise in rates, without adequate investigation. Again, he charges the commission with being derelict in its duty in allowing as he alleges, 22 per cent. on physical properties for overhead charges, while leading authorities place such allowances at 12 per cent. or less. Also he alleges that certain items were over-valued as high as 50 per cent.

ENGINEERS' UNIT PRICES TOO HIGH.

Commissioner Hall further charges that the commission engineers allowed unit prices, which if applied to the inventories of telephone companies out over the state, would add 28 per cent. to the values claimed by the owners of these properties in sworn statements to the commission.

In view of the fact that the commission found the service only 92 per cent. perfect, Commissioner Hall thinks that 7 per cent. net dividends is too high to allow the stockholders. Further, that the 9 per cent. allowed for depreciation should not be figured on real estate, working capital and other permanent items.

Mr. Hall's opinion begins with a history of the commission and the telephone company. Full and complete showings and advance estimates, he says, should have been required of the telephone company and willingly furnished by them for all investments since March, 1907, when the commission was created. Since the writer's presence in the commission he had attempted to have his colleagues get such showings, but had failed. Anticipating a necessary raise in rates, the telephone company officers should have proffered such showings and cannot now complain, if, when mere estimates are offered, the commission resolves the doubt in favor of the public.

Commissioner Hall goes on to cite the history of securities issued, taking them up one by one from the first, of $1,436,656 on June 30, 1909, when the Lincoln Telephone & Telegraph Co. took over the Lincoln Telephone Co., the Western Telephone Co., the Beatrice, Johnson County and Crete companies. He points out that this was done the day before the "stocks and bonds act" went into effect, but says that nevertheless the commission, as a true servant of the people, should have made an investigation. The opinion reviews the list of stock and bond issues authorized by the commission, up to a total of over $4,000,000, upon the mere statement of the telephone company citing, generally, where the money was to go.

A step in the right direction was taken, according to the opinion, when the detailed inventories of the purchased Bell properties were filed January 8, 1912, when the commission authorized the issuance of $2,205,730 worth of preferred stock. He says that he voted wrong, however, in voting for the allowance of the issue, inasmuch as the inventories should have been checked.

Commissioner Hall criticises the fact that the company was allowed to purchase the Bell properties at a premium of 17½ per cent. If the Bell properties were falling and not earning money, contends the opinion, then it was the commission's duty to see that no premium was paid, or at least, that the price paid was not more than the people could be required to pay rates and profits upon.

The opinion then takes up the matter of estimates, saying that only the methods and conclusions of the commission's engineers is doubted and not their integrity. After outlining the general way in which the engineers estimated reproduction new and present values, the dissenting opinion attacks the overhead charges allowed, including the following nine items:

Item 1. Organization, administration and legal expenses.
Item 2. Incorporation fees.
Item 3. Occupation fees.
Item 4. Stationery and printing.
Item 5. Insurance on properties before income period.
Item 6. Taxes on property before income period.
Item 7. Interest on money invested before income period.
Item 8. Engineers and superintendence.
Item 9. Contingencies.

The total of these nine items, under main division No. 9, overhead charges, amounts to reproduction new value $305,988, and present value $232,559. These amounts were added to the reproduction new value and to the present values respectively, which brought the total values up to:

Physical properties, reproduction new	$1,479,914
Reproduction new overhead charges	305,988
Total	$1,785,902
Present value of physical properties	$1,098,859
Present value of overhead charges	232,559
Total	$1,331,418

DISCREPANCY AS TO OVERHEAD ALLOWANCE.

The dissenting opinion then proceeds:

"The commission says on page 6 of the opinion as printed and published by the telephone company, that: 'The taking of testimony developed considerable controversy with regard to the question of general expense items entering into the values, and this controversy was apparently founded on the suspicion that the amounts allowed for general expense, or so-called overhead items, was excessive. The commission is convinced that the amount of 17.2 per cent. for general expenditures allowed by our engineers is conservative.' And then before other commissions and, of course, we will take for granted that the commission means to make this calculation upon the same basis that the commissions do that are being quoted—a careful analysis of the facts reveals the fact that not 17.2 per cent. has been allowed, but a much higher percentage. Mr. Sloan and all the experts certainly could not have made a very careful check independently of each other because they all agreed at the time of the hearing that 17.2 per cent. was the per cent. allowed, and that it was the proper per cent. to allow in this case. The commission found that the reproduction new of all the phsyical properties of the plant, less working capital, was $1,410,067, and that the reproduction new value of the overhead charges were $305,988. An application of the ordinary rules of

percentage reveals the fact that the percentage allowed on the reproduction new basis is 21.7 per cent.

"The commission has also found that the present value of all the physical properties, less working capital, was $1,029,012, and that the present value of the overhead charges allowed was $232,559, and again I find that the percentage allowed on the basis of the present value is 22.6 per cent. In other words, the actual amounts allowed for overhead charges on the basis of reproduction new is $63,453 more than the 17.2 per cent., and the actual amount allowed on the basis of the present value is $55,566 more than the 17.2 per cent.

"The maximum amount that would be allowed by the Wisconsin commission in such cases is 12 per cent., which in this case, on the basis of the reproduction new would amount to $169,208. We have allowed $305,988 or $136,780 more than the 12 per cent. allowed by the Wisconsin commission.

"On the basis of the present value, the 12 per cent. allowed by the Wisconsin commission would amount to $123,481. The amount allowed is $232,559, or $109,078 more than the 12 per cent. allowed by the Wisconsin commission.

"It seems to me that this is entirely too great an allowance. It is true that there are wide differences among the authorities as to such charges, and while some allow part of such items, other authorities exclude them. But I believe that I am supported by the great weight of authority that 21 per cent. upon reproduction new value and 22.6 per cent. upon present value is too great an allowance and that part of the items should not be allowed, or should be greatly pruned."

Commissioner Hall then cites a number of cases in point and goes on to show instances where the percentage allowed for overhead expenses has been even less than the 12 per cent. of the Wisconsin commission. He then goes on to discuss the various items under the overhead charge as follows:

"Item 1 is for organization, administration and legal expenses, and the commission's engineers arbitrarily assume for the purpose of their appraisal, that it took two years to construct the Lincoln exchange before a dollar of revenue came in from telephone users. They further assume that an official organization, administrative forces and lawyers would be required during the entire two-year period. They therefore apply for this item an arbitrary of 2 per cent. on all the physical properties which for the Lincoln exchange alone on the reproduction new amounts to $26,618, and upon the entire property in the Lincoln zone to $29,598. (In giving these figures it will be noted that they are not technically the proper ones to use, because after such figures were given, a certain amount of deductions were made on account of toll duplications, and these figures would be reduced proportionately, but my final total figures are the totals of all these figures after said deductions have been made.) The commission has no evidence before it as to the time required, but I feel certain that it was less than two years, and it should not be difficult of determination, and the applying company now has under its control all the books and records of this company and its predecessors and makes no showing justifying such an allowance. Simple good faith on the part of the company would demand a showing to entitle it to the allowance of such sums."

Would Reduce the Interest During Construction Rate.

Other items of overhead charge come in for similar criticism. Commissioner Hall makes an especially strong attack on item 7, allowing interest on money invested during construction and before the income period and the so-called arbitrary assumption of a two-year period, during which the full amount is allowed and no income figured. He advocates the allowance of a proper figure for this item but at the same time quotes cases where no interest was allowed. One-fourth of the amount allowed by the commission would have been amply sufficient for the purpose, according to the dissenting opinion.

Also attacked is the item for engineering and superintendence, which the opinion would reduce from $97,233 to $40,686 on the reproduction value. Commissioner Hall would entirely exclude as an absurdity under the circumstances the items allowing 5 per cent. on physical values as an overhead charge for omissions and contingencies. He would reduce the items of overhead expense as follows:

Items	Reproduction New	Present Value
1	$14,799.15	$12,895.31
2	896.00	886.00
3	240.90	178.48
4	3,699.22	2,743.05
5	1,078.45	813.28
6	2,656.78	1.988.97
7	42,427.50	31,453.99
8	40,686.17	30,922.03
Total	$106,484.17	$81,881.11

The totals, as allowed by the commission for these items were: Reproduction, new, $305,988; present value, $232,559.

Where the Engineers Erred.

Then Commissioner Hall takes up the unit prices at which the engineers figured the physical value on the inventories returned by the telephone company. He takes at random the inventories of a number of telephone companies out in the state furnished the commission by the owners under oath. He compares the application of the unit prices of the engineers to these inventories, showing how greatly the engineers' figures would increase the inventory figures of reproduction new value, and present value. After giving the figures for 12 companies the opinion continues:

"The engineers' reproduction new value of the above properties amounts to $375,021 plus. The company's valuation is $290,830. The engineers' value exceeds that of the company's by $84,191, which makes the engineers' reproduction new value something over 28 per cent. more than the company's sworn value. We also find the engineers' present value of these properties to be $392,724, and the company's present value to be $306,612; engineers' valuation exceeding by $86,112. Here again we find that the engineers' valuation exceeds the company's sworn value by something over 28 per cent.

"Now, I am not contending that the above mentioned sworn returns of these companies, situated throughout the state, are the true valuations of their properties, and if said companies were applying for authority to issue stocks and bonds or for the purpose of fixing rates, I would think it the duty of the commission to have the properties carefully checked and the showings analyzed, but I do feel certain that said showings are favorable to the several companies and that if said showings were accepted by the commission the companies would not be injured. and when, as found here, the commission's engineers make findings more than 28 per cent. higher than the claims of the companies as to both reproduction new and present values, it seems to me that it should cause any reasonable man to stop and think and that the commission should take judicial notice of the fact, and that a searching investigation should be made to find the difficulty. For, if the

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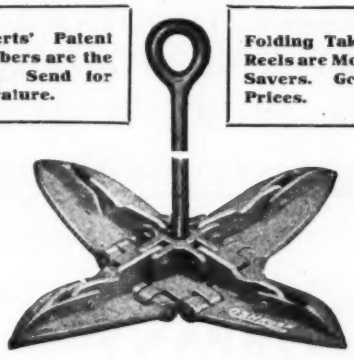

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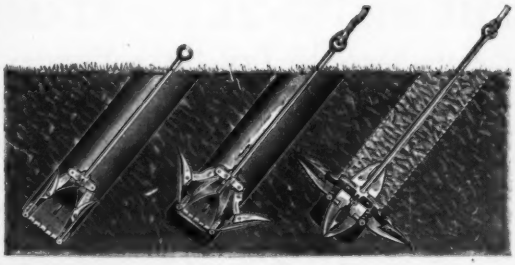

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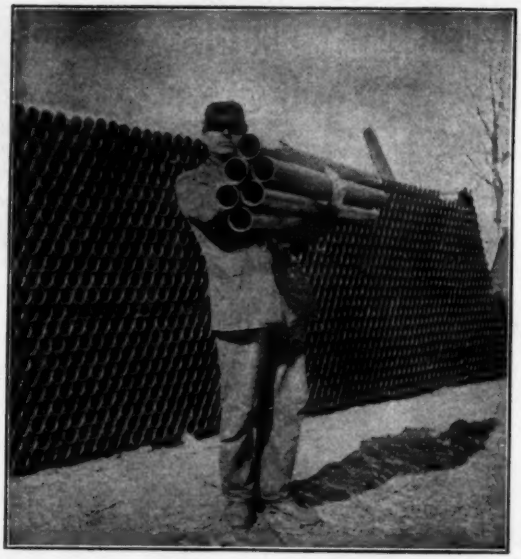

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commission continues to apply the present 'unit price' to the telephone systems over the state, it will thereby be laying a grievous burden upon the people of the state and in my opinion, be subjected to very severe criticism.

"The same system was used in determining the value of the properties in the Lincoln zone, and if I am correct in my reasoning, our engineers are at least 28 per cent. too high. In dividing the reproduction new value, $1,705,907, as found by the engineers by 1.28 we have $1,395,240 as the reproduction new value, and dividing the present value, $1,331,418, as found by the engineers by 1.28, we have $1,040,170 plus, as the depreciated or present value of the property.

The Depreciation Allowance.

"Now, going to the question of operating expenses, I am of opinion that this cannot be correctly ascertained at the present time on account of the chaotic condition of the business during the process of combining the two plants, and that the correct amount can only be determined after the plant is running under normal conditions.

"The commission has allowed 9 per cent. on the reproduction new value of the plant for current maintenance and depreciation, and here I wish to say that there is a vast difference as to whether the 9 per cent. is figured on the reproduction new value or upon the present value of the plant. In some of the leading cases the present value is used for making the estimates for maintenance and depreciation, after deducting real estate and stores and supplies.

"However, it makes no difference whether a certain per cent. is calculated upon the present value after deducting real estate and stores and supplies to raise a definite sum of money to take care of such items, or a smaller per cent. is calculated upon the larger value, but I have been unable to find a precedent in telephone cases where 9 per cent. has been allowed upon the reproduction new value, including real estate, working capital and stores and supplies. From the authorities that I have examined I am convinced that the allowance is above the normal and it is much above the amounts that the applicant has spent in the past for such purposes.

"However, I think it is generally admitted that there are abnormal conditions that will have to be taken care of. For instance, the three wire system will have to be converted into the two before adequate service can be given and of course this will take a large amount of money, which will have to come from somewhere. Other abnormal expenses will have to be met, that have not as yet been taken care of, by reason of the consolidation of the two plants and I have no doubt but that the 9 per cent. will be all used on account of such extra expenses. But under normal conditions 8 per cent., when calculated upon the reproduction new value including real estate, working capital and stores and supplies, is certainly sufficient. Real estate does not depreciate; the new central building not more than 2 per cent; the underground conduits not more than 2 or 3 per cent., and so an allowance of 9 per cent. for current maintenance and depreciation leaves a very large amount to take care of the more depreciable property, such as poles, cross arms, wire, instruments on the walls, etc. Eight per cent. will reproduce any plant in its entirety in a period of 12½ years.

"One case quite comparable to the one at bar in the matter of operating expenses, including taxes, insurance, current maintenance and depreciation is that of the Cumberland Telephone & Telegraph Co. of the city of Louisville, supra. The value of the property involved in that case is much greater than the property of the Lincoln Telephone & Telegraph Co. in the Lincoln zone, exclusive of toll lines, and in that case after a careful study of all operating expenses including taxes, insurance and current maintenance and depreciation, the court allowed $235,664 per year, while the Nebraska commission in the case at bar allowed for the same items $265,040 on a much smaller property.

"The commission has allowed the applicant 7 per cent. interest as a net return to the stockholders and with this I would have no criticism to make if the company were delivering first-class commercial service to its patrons, but if service is to be considered, then I think the company should be content with 6 per cent. net return after all operating expenses, taxes, insurance, losses, current maintenance and depreciation have been paid out of the operating income, and I think the commission would hesitate to make such an abnormal rise in rates that the stockholder may receive 7 per cent. net unless there was no doubt that the company was capable of delivering first-class service to its patrons.

"As has already been pointed out, the commission has said as a matter of record, 'It has been at all times and is now thoroughly imbued with the accepted doctrine that where conflicting interests arise between the common carrier on the one hand and the public on the other, that the commission acts as the special representative of the public in safeguarding the interests of the public, and that where a reasonable doubt exists as to the proper action to be taken by the commission determining such conflicting interests, it should be resolved in favor of the public.' In the light of this very praiseworthy sentiment, let us take a brief review of what the commission has done in the present case.

Summary of Exceptions.

"It surely did not act as the special representative of the public in perfunctorily and ministerially allowing the applicant to issue more than four millions of securities; and surely it did not resolve the doubt in favor of the public when it allowed $305,988 to be added to the physical property value or overhead charges, which amount to approximately 22 per cent. on the physical properties, while leading authorities place such allowances at 12 per cent. or less. Most certainly the commission did not resolve the doubt in favor of the public when it accepted in total the value of the applicant's property or determined by the estimate of the commission's engineering department, when slight investigation of the records of the commission would show that said engineers were placing the telephone properties of the state at an amount about 28 per cent. greater than the property owners' own sworn statement placed them. Once more the commission did not resolve the doubt in favor of the public when it allowed 9 per cent. of the reproduction new value, including real estate, working capital and stores and supplies for current maintenance and depreciation, when it is much above the normal. Once more the commission did not resolve the doubt in favor of the public when taking into consideration the fact that service must be considered in making rates sufficient, not only to pay all operating expenses, current maintenance, depreciation, insurance, etc., and above these amounts a sum sufficient to pay 7 per cent. net dividends to those who have invested their money, property and skill to the public use, when it found that the service was 92 per cent. perfect. In brief, these are some of the reasons why I could not consent to the request of the applicant herein.

"I most profoundly hope that there is nothing in what I have said that will do injury to any, for I have undertaken to discuss this matter in a spirit of candor, and wishing to do equity both to the company and to the public."

TALE OF THE TELEGRAPH AND TELEPHONE.

(*Concluded from page 33.*)

German schoolmaster, was actually using a telephone of his own invention. That old telephone, although it would look queer to you and like no telephone at all, actually was to all intents and purposes the telephone of this day, with its transmitter."

Thus is the long exorcised ghost of the Reis claim called forth to parade before a new generation of telephone men. It is in vain, of course, for it is easily allayed and sent to rest again. There is just enough of a grain of truth in that writer's statement to make it sound plausible.

Reis never invented, and never claimed the invention of a speaking telephone.

What he invented was the name. He gave the name "telephone" to the apparatus he did invent, but it never spoke a word during its life and there was no scientist wise enough to give it a voice, until Bell showed the scientific world how to do it. The best it could do was to reproduce, after a fashion, certain musical notes, and that was all the inventor ever claimed for it, though he was exhausting his knowledge and energy in a hopelessly vain effort to make it talk. In some of his writings he said that if the person at the distant end knew what was going to be said he sometimes thought he heard the words. But Bell's invention proved conclusively that no one ever heard it speak, and Reis' own descriptions and letters proved that fact, also, of themselves.

The Journal writer further announced: "Reis' idea was that the telephone must be arranged in such a way the electrodes did not touch," which is untrue. Reis' first description of his apparatus, after his Frankfurt lecture of 1861, leaves the point in doubt. Another apparatus, described later, showed the electrodes did not touch, but his final machine, with which scientific and curious people became the best acquainted, in the model he finally decided upon and manufactured for sale, the electrodes touched and were held together by a weak spring, so they could separate, when acted upon by the waves of sound.

All that the Journal man says about turning a screw a thousandth part of an inch vanishes into thin air, for the simple reason that Reis himself did practically that very thing without in any way making a speaking telephone out of his curiously interesting electrical musical box.

All of Reis' descriptions and explanations of what he invented and all that he claimed for it appear in the supreme court reports, Vol. 126, of the telephone cases decided during the October, 1887, term.

The telephone invented by Bell had neither electrodes nor batteries. There were no adjusting screws to turn in any direction, any fraction, or multiple, of an inch, though he pointed out how transmitting devices might be made in this and other forms.

It was Emil Berliner, who, acting on this hint, patented a batery form of transmitter with electrodes. But it was Thomas A. Edison who first used carbon electrodes, and what was more important, applied the induction coil principle to the telephone transmitter. A letter received from Mr. Edison, some years ago, tells the story. It says:

Orange, N. Y., Oct. 13, 1899.

G. W. Foster, Esq.,
Dallas, Texas.

Dear Sir:

In reply to your favor of the 5th ult., I beg to state that I was the first to use the carbon transmitter, induction coil and battery for telephone purposes, and the Western Union and Bell company paid me a royalty for it for 17 years.

Yours truly,
(Signed) Thos. A. Edison.

Chief Justice Morrison R. Waite of the Supreme Court of the United States disposed of the claim made for Reis by the army of infringers in a very few words: "Reis did not anticipate Bell's discovery. Reis discovered how to produce musical tones, but he did no more. He never succeeded in actually transmitting speech. He worked upon the principle previously suggested by Bourseul."

Morse was viciously attacked by telegraph buccaneers, but the onslaught upon Bell stands without parallel in history. The extreme simplicity of Bell's device was at once its protection and its invitation to attack, but it weathered the storm and was upheld in every particular.

The rising generation should know and remember this indisputable fact.

Mr. Vail retired from the active management of the Bell company in 1887, after the last infringement case had been finally tried in the United States district courts and the whole matter, in all of its aspects, was before the supreme court for final adjustment. He had fought the fight from beginning to end and having won every battle and placed his company upon a straight road to success, retired in early life, at the age of 42, to enjoy a much needed respite, and visit something of the world beyond the seas. Twenty years later he was visited at his home by the entire directorate of the Bell company and besought to resume the management of the great public utility, which he reluctantly consented to do.

On Speedwell avenue, at Morristown, N. J., lie the melancholy ruins of the iron works of Judge Stephen Vail. The spot they occupy should be preserved to posterity. It was here that the railroad, the steamship and the telegraph found their first friends and within and about these old walls the architect of the telephone edifice received his first and lasting inspiration.

(Conclusion.)

South Dakota Law Permits Only Good Telephone Service.

In the case of a complaint by the Salem Commercial Club, Salem, S. D., attacking the telephone service furnished by the Salem Telephone Co., the Board of Railroad Commissioners of South Dakota holds that "it is not a sufficient answer for a telephone company to say that it has not the equipment, and is therefore not able to furnish the service demanded, because it is its duty to procure the equipment and furnish the desired service."

In the case in question the exchange is operated by C. M. Searles a druggist and the local switchboard was located behind the prescription case in the rear of the drug store while the toll booth was situated in the center isle of the store in front of the prescription case. From the testimony it appears that the service was subject to such defects as might be expected where a small system is operated as a side line to another business.

The commission ordered that a place be partitioned off for the switchboard and long distance booth, or that these be removed to some other room or place where the system will not be operated in connection with any other business.

The commission further pointed out the respects in which the service must be improved, including the supplying of Sunday service and of such night service as could be afforded by attaching an alarm bell to the switchboard so that an attendant might be awakened and attend to the calls when made. It was declared to be the duty of the company to employ enough operators to supply efficient service and that provision should be made for giving prompt and courteous attention to all complaints reflecting a want of service.

It was further ruled that the practice of giving lower rates for residence telephone service to persons having business telephones, as well as of charging equal rates for party and main line service must be abandoned.

From Factory and Salesroom

Automanual Equipment for Demonstration.

E. C. Lewis, of the Telephone Improvement Co., recently returned to Chicago from a two months' trip through the South. He speaks of Southern hospitality with great enthusiasm and was greatly pleased with the interest evinced in Automanual eqipment.

Mr. Lewis had with him the Automanual demonstrating outfit shown in the accompanying illustration. The demonstrator represents one trunk circuit for 10,000 lines capacity, of the new series "B" Automanual system, involving relay primary selection making use of the 31 point multi-contact knife switch. This switch is one of the important features of the series "B" apparatus, as all automatic selections of the Automanual system are performed by this exclusive method.

At the left of the frame in the illustration, is shown the line and cut-off relays and the multi-contact relay. Immediately below these relays is mounted the operator's key set, three sets of this type being furnished with each regular operator's equipment. On the first panel is mounted the test and shift switches with their associated relays. On the second and third panels are the first and second selectors and the associated relays, while the connector and party line selecting switches are mounted on the last panel, also a ringing relay switch, an exclusive Automanual feature.

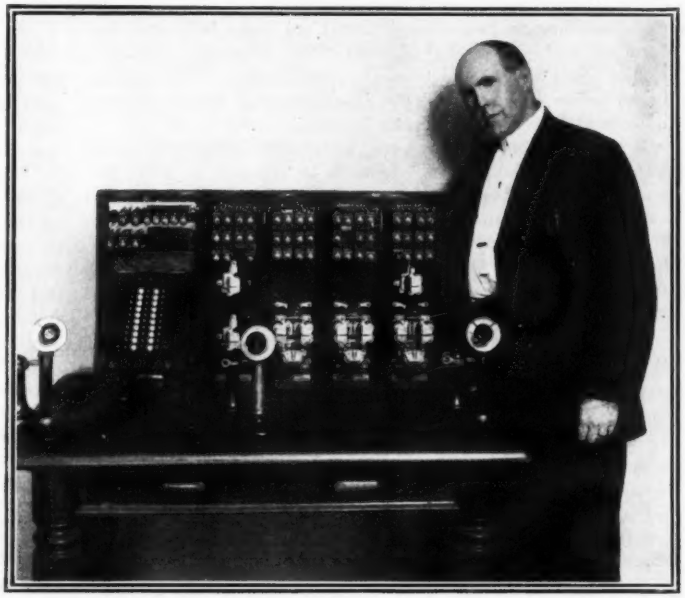
It will be noted that the ordinary type of common battery instrument is used with the demonstrator. The switching apparatus shows the automatic selection of an idle operator—the call appearing at the operator's position practically instantaneously with the removal of the subscriber's receiver from the switchhook—operator's cutout, automatic busy test, automatic ringing and automatic ring back, automatic disconnect and instantaneous recall feature of the Automanual.

In connection with this operating demonstration, attention is called to the features of the Automanual system, such as its flexibility and the use of an apparatus bay in either the private branch exchange system, or in a 1,000-line or 10,000-line regular exchange system, also that it is possible to divide the telephone plant into a number of small sub-exchanges and yet have all the operators in one room, thus effecting great economy in cable and wire. It is claimed that the Automanual principal embodies all of the good points found in other systems and contains none of the objectionable features.

The demonstrator was first shown by Mr. Lewis at the annual convention of the Tri-State Independent Telephone Association, at Corinth, Miss., where it attracted a great amount of attention.

After leaving Corinth, Mr. Lewis visited Memphis, Tenn., Jackson and Meridian, Miss., Mobile, Ala., Beaumont, Houston, Waco, Dallas and Sherman, Texas, Shreveport, La., Olathe, Kans., and Kansas City, Mo., stopping on returning at Canton, Ill.

"E. C." is very proud of the demonstrator which he calls his "affinity" and the pair will become very well known to the telephone public during the ensuing months.



E. C. Lewis and His "Affinity," the Automanual Demonstrator.

Novel Use of Matthews Telefault.

J. T. Greene, superintendent of the fire and police alarm telegraph and outside electrical inspection of the department of public safety of Toledo, has notified W. N. Matthews & Brother, of St. Louis, of an interesting experience with the Matthews Telefault in locating an underground cable trouble in Dayton, Ohio, during the flood. Mr. Greene's statement is as follows:

"Some time ago a large boat dragging anchor, broke one of our heavy water mains crossing the Maumee River, and the water main being buried, the divers had considerable trouble in locating it, let alone the break. When the water main was laid, the Western Union Telegraph Co. installed a large submarine cable in the same trench; the cable was undisturbed by the boat's anchor so their service was not interrupted.

"To locate the position of the water main in the river, we took a few good vacant pairs through the Western Union Cable and ground same on opposite side of the river, connecting the Telefault to pairs and ground same on water pipe. We then used a long water-proof cord and installed finder in the vapor and water-proof glass receptacle with suitable guard. We had no trouble in picking up the cable by dragging same along the bottom of the river. Of course, locating the cable gave us the trench that the water main was laid in."

Book Reviews.

TELEPHONE CABLES, by J. C. Slippy. Published by J. C. Slippy, Pittsburgh, Pa.; 150 pages with 97 illustrations. Price $2.50.

The book, which is called a handbook of the design, construction and maintenance of the telephone cable plant, aims to present in handy, ready reference form, the principal data which is required almost daily by those having to do with cable plant layout, installation and maintenance. The size is such that the book can readily be carried in the coat pocket.

The art of telephony covers such a wide range of subjects that the information relating to cable work, such as is usually wanted by those engaged in that branch of telephony, is hard to obtain in concise and available form.

Sample types of specifications of various kinds of cable are first given, after which the subject of cable plans is

taken up, touching on such points as the scope of the plan, development study, distribution, type of construction, the economy of various plans or construction, etc.

The chapter on cable construction gives details of the standard methods in use in modern cable installation work, with brief description of the materials and devices used. Brief descriptions are given of forms to be used in keeping an adequate cable record in order to obtain the best results from the use of the cable.

The importance of inspection of the cable plant at regular intervals in order to keep it in the best operating condition, is emphasized by a description of inspection methods and the various points to be watched, especially for the locating and preventing of electrolysis troubles. Considerable space is devoted to cable trouble and methods used in recording it, together with descriptions of testing equipment and methods of trouble locating.

The concluding chapter gives some interesting labor cost figures for various parts of work in connection with installation of cable with the data upon which they are based. A great amount of useful data is given in tabulated form in the appendix and also in the main part of the book. Altogether the book contains a great amount of information regarding cable work that is of interest not only to the man in the field, but also the man in the office.

TELEPHONE ERECTION AND MAINTENANCE. by Herbert G. White. Published by S. Rentall Co., Ltd., London, England; pages with illustrations; price 1/6 net.

This book is intended, primarily, for the electrical contractor in England and other countries where the English type of intercommunicating or house telephone equipment is used. Diagrams of the wiring of the various kinds of telephone sets, from the cheapest battery sets to the expensive types of intercommunicating sets, are shown, and directions given as to the manner in which they should be installed. No attempt is made to go into details regarding the installations of equipment such as is used by operating telephone companies.

H. W. Johns-Manville Co. at Watertown Convention.

One of the most interesting and unique exhibits at the recent convention of the International Association of Municipal Electricians, at Watertown, N. Y., was that of H. W. Johns-Manville Co. In part its display consisted of J-M fibre conduit including elbows, bends, junction boxes, etc., for electrical ducts as well as pole distribution. This material is fast coming into favor all over the country because of its remarkable durability and economy.

It weighs only 1/6 as much as stoneware conduit, thus reducing freight and trucking charges. And as it permits of more rapid handling, a proportionate saving in labor cost is effected. It is practically as smooth as glass inside, thus eliminating danger of damaging cable sheaths. It is claimed to be impervious to moisture, gases, water, acids, and also proof against electrolysis.

Among other things exhibited was a full line of Noark enclosed fuses and blocks, fuse service boxes and protective blocks. These devices operate as their name implies, with "no arc" or flash; they are said to be noiseless, inexpensive and to occupy a minimum of space. Noark protective blocks may be equipped with either carbon or copper blocks for lightning arresters, depending on the location and service for which they are to be used.

Friction and rubber splicing tapes, dry batteries, Pyro hand extinguishers, dielectric cements, Vulcabeston insulation and Niagrite were among the other products displayed by the company.

J-M Niagrite is a specially prepared asbestos tape, three inches wide and is used for taping high and low tension telephone, telegraph and fire alarm cables. Being, it is claimed, absolutely fireproof, this tape prevents loss of cables due to the melting of the sheath by fire. It also affords protection from fires due to short circuits or from arcs between adjacent cables.

J. H. McManus and J. R. McLain of the H. W. Johns-Manville Co., had charge of the exhibit, assisted by Robert Cole, electrical engineer of the Johns-Pratt Co. The H. W. Johns-Manville Co. has published interesting literature on all the foregoing subjects and will send free copies to interested inquirers.

Statement by Pierce-Arrow Motor Car Co.

The Pierce-Arrow Motor Car Co., Buffalo, N. Y., makes announcement that in view of the numerous inaccurate statements that have appeared in connection with the new model Pierce-Arrow, two-ton truck, it wishes to call attention to the following facts:

"The truck is not of 2½-ton capacity, as has been stated in one or two instances. While the total admissible load on the chassis is 5,200 pounds, this total load must include the weight of both body and paying load. If the body weighs in excess of 1,200 lbs., the paying load will be less than two tons by the amount of this excess. As the average weight of bodies is 1,200 lbs., the permissible average load is exactly two tons.

"This truck is a two-ton truck without any guaranteed percentage of over load. The tire equipment is 36x4 in. front single, and 36x4 in. rear dual; not 34x4 in. as has been published. The service brake operates on a drum behind the transmission, by means of contracting shoes. This is not a band brake."

American Automatic Telephone Plant To Be Sold.

The plant of the American Automatic Telephone Co. at Urbana, Ohio, together with over 10 acres of land on which the plant is located, will be sold at public auction at the office of the company on September 20. The entire equipment of the plant will also be sold, including all machinery, tools and dies. The patents of the company were sold a few weeks ago to the Bell company for $75,000, but the right to manufacture from the patents cannot be exercised elsewhere than at Urbana, under the terms of the sale. The receivers of the company are A. F. Vance, Jr., and T. A. Edmondson.

Paragraphs.

WM. J. MCKENNA CO., 9 South Clinton street, Chicago, is now the Chicago agent for the General Insulate Co.

THE SMITH & HEMENWAY CO., 150 Chambers street, New York City, announces that it will be pleased to mail on request, to all interested, a copy of a new illustrated booklet which has just been issued by the Red Devil tool factory giving net prices on 3,000 Red Devil tools.

THE GENERAL INSULATE CO., 1008 to 1014 Atlantic avenue, Brooklyn, N. Y., has issued a new folder containing the results of tests of moulded "Hi-Heet" material. The tests were made for dieletric strength, for compression, transverse and tensile strength, acids, etc., and were made by the Electrical Testing Laboratories of New York City.

W. N. MATTHEWS & BROTHER, St. Louis, Mo., are sending out some effective printed matter calling attention to the method of installing the Matthews boltless guy clamps and offering the "Baby" and "Giant" clamps on 30 days' free trial as evidence of the firm's confidence in these clamps.

ROME WIRE CO., Rome, N. Y., illustrates its September calendar with a striking picture by Brett entitled "Anything for an Excuse." Incidentally attention is directed to the fact that the company manufactures "electrical wires."

Legal Cases and Decisions

By A. H. McMillan

An Undesirable Subscriber.

"Can any person demand a telephone and get it? In other words, if a man is undesirable or one who is always stirring up trouble among the subscribers, for the operators or management, does the owner of a telephone system have to install a telephone in his residence or place of business? Or it being in such a place, does the company have to let it remain there? If I should decide to remove a telephone contrary to a subscriber's wishes, what would be the mode of procedure?"

We regret that the trouble maker and the public nuisance is just as much entitled to have a telephone installed as any one else, provided he pays the rental and complies with the rules and regulations of the company, and does not use the telephone in any illegal business or occupation. The fact that a man has made trouble for the operators and management by stirring it up among the subscribers, is no ground of defense on the part of the telephone company when that undesirable man asks for installation of a new telephone. Neither is that fact reason for removing the telephone. If the man uses profane or obscene language over the telephone, or fails to comply with any of the regulations of the company, his telephone may be removed. The mode of procedure in such case would be to notify him to desist and if the offense was repeated, to take the telephone out. No legal proceeding will be necessary.

Struck by Lightning Under a Tree.

"One night recently a man stopped during a thunder storm, under a tree on which one of our wires was fastened. The lightning struck the tree and, running along on the wire, tore up one of our poles some distance from the tree, burning the wire into two parts some short distance beyond the pole and killed the man instantly. We understand that there is talk of bringing suit against our company. Is there any law in Arkansas that would make us liable? It is said that we must have ground wires on our poles. Please give us your opinion on it."

We know of no law in Arkansas or elsewhere that would make you liable in the absence of a showing that the accident was caused by negligence on your part. We do not believe that such negligence can be shown or exist in the case you state. It will be necessary for a claimant to show by evidence of experts that the absence of ground wires on your poles was negligence. Even then we do not believe that you would be liable, because we think you owed no duty to the passerby who stopped under a tree, and also that the injury was not one that would ordinarily be foreseen as a result of the occurrence.

Competitive Bidding for City Contract.

Suit was brought against the city of Thief River Falls and the Tri-State Telephone & Telegraph Co., to restrain them from entering into a contract relative to the construction of a telephone plant and the furnishing of telephone service to the city. The contract provided, among other things, that the company should construct and equip a telephone exchange with 450 telephones. It should operate it until the city purchased it, which it was given an option to do for $30,000 on 30 days' notice, but that it need not purchase it at all.

It was also provided that during the operation of the plant, the company should occupy certain city property at a stated rental; that the charges of the company for service should not exceed certain fixed rates; and that the contract should not be deemed to grant a franchise right or privilege to occupy the streets, alleys, and public places of the city, or to operate a local telephone exchange, except as provided in the contract, until the city should purchase. It was also stated in the contract that the city might grant a franchise to another company or itself maintain an exchange, and that under certain conditions the city might offer for sale a franchise to operate the plant.

A demurrer was had to the sufficiency of the complaint. The court held that the contract, whether viewed as a franchise, or as a contract to construct a telephone system, was invalid, because no advertisement or proposals were made, and no provision was made for competitive bidding, as required by the charter of the city. The demurrer was not sustained.

It was contended that the plaintiff in the case, who was a resident freeholder and taxpayer of the city, and the owner in fee of a lot abutting one of the streets, could not properly bring the suit, but it was held that he sustained sufficient special injury to authorize him to sue for an injunction against the execution of the contract. Arpin vs. City of Thief River Falls (Minn.), 141 Northwestern 833.

Methods of Discontinuing Service.

Suit was brought against a telephone company in the state of Arkansas for the statutory penalty of refusing to furnish telephone service for a period of one day. The court directed a verdict for the plaintiff, from which the company appealed. The company showed that there were two methods of discontinuing service.

One is where there is a temporary discontinuance at the request of the subscriber, which is indicated to the operator by placing a white peg or plug in the multiple on the switchboard in the central office. When the telephone is disconnected on account of failure to pay a bill, the condition is indicated to the operator by placing a metal guard over the answering jack lamp on the switchboard. When that condition obtains, it is the operator's duty, when a call is received from that number, to connect it with the cashier's office.

The company contended that there was an error on the part of one of its employes, as the plaintiff had not requested a discontinuance of service but a white plug indicating such a request had been put in. The plaintiff testified that he tried to use the telephone but was denied service by the operator on the ground that the service bill had not been paid. The court held that the question should have been submitted to the jury, to determine whether the refusal to give service was willful on the part of the telephone company or not. In construing the statute the court said:

"The manifest purpose of the statute is to inflict a penalty on a telephone company, not for negligence or inattention in failing to repair its instrumentalities for supplying service, but for willful refusal to furnish telephone connections and facilities without discrimination or partiality to all applicants who comply with the rules."

Southwestern Telegraph & Telephone Co. vs. Garrigan, 156 Southwestern, 447.

Breaking of Cross Arms.

A lineman when in the act of falling from an electric light and power pole, caught hold of some pins on the cross arm to save himself. Through the weakening of the wood by internal decay, the cross arm became weak and gave way. The lineman sued the company for the injuries received in falling from the pole. One of the most important conflicts in the case was over the method the company had applied for the exercise of reasonable care to furnish this lineman a reasonably safe place in which to work.

The substance of the company's evidence was that the cross arms and pins were not intended to be used by linemen for purposes of climbing and support, and that when linemen were sent out to work on poles, they were charged with the duty of making their own inspections. The jury solved this conflict in favor of the lineman. The Kansas City Court of Appeals held that, although the primary purpose of the cross arms and pins was not to support linemen, yet the lineman was not guilty of contributory negligence because he tried to use a cross arm in making an ascent, where, in the installation and maintenance of lines, cross arms are used by linemen as means of support.

The court also called attention to the fact that the lineman did not try to use the cross arm and pins as an aid to his ascent, but that he clutched at them in the act of falling, as a drowning man grasps at straws. The court said: "A person in imminent danger of great bodily injury, cannot be condemned for acting on the natural impulses of the instinct of self preservation."

A judgment for the plaintiff was reversed by the court because the judge erroneously instructed the jury on the subject of whether or not the lineman had the means and time of making a comprehensive inspection of the poles, and, as a lineman having such opportunity, was bound by the duties of his employment to make such inspection. Rutledge vs. Swinney, 156 Southwestern, 478.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personal.

GEORGE E. BICKLEY, superintendent of plants for the Corn Belt Telephone Co., of Parkersburg, Iowa, has been promoted to the general management of the company.

A. H. SCOTT, formerly wire chief for the Mountain States Telephone & Telegraph Co., at Sterling, Col., has been promoted to manager of the Fort Morgan district.

H. L. TYSON, local manager for the Wisconsin Telephone Co. at Chippewa Falls, Wis., has resigned to enter the employ of the International Correspondence Schools at Kenosha, Wis.

C. A. O'ROURKE, district commercial manager of the Iowa Telephone Co., with headquarters in Dubuque, has been appointed commercial manager at Des Moines, Ia., to succeed H. G. Conger.

C. A. BLOSS has resigned his position as district manager for the Union Telephone Co., at Owosso, Mich. G. L. Pattee, formerly local manager of the company's exchange at Mt. Pleasant has succeeded him.

O. E. MOWRER has severed his connection with the Rock River Telephone Co., of Rochelle, Ill., as manager of the Oregon, Ill., exchange. Mr. Mowrer and family have moved to California where they intend to make their home.

S. H. BENNETT, local manager for the Southwestern Telegraph & Telephone Co., at Pine Bluff, Ark., has resigned to accept a position with Williams & Dewoody, office outfitters, as special representative, with headquarters at Little Rock, Ark.

JAMES S. BRAILEY, JR., has retired as president of the Toledo Home Telephone Co., of Toledo, Ohio. Mr. Brailey was largely instrumental in the organization of the Home company and has been president of the company practically since its organization. During the past eight months Mr. Brailey has been devoting practically all of his time to the affairs of the Yaryan Naval Stores Co., and the necessity of giving more time to that company is given as one of the reasons for his retirement from the Home company. He will be succeeded by Jethro Mitchell.

R. V. ACHATZ has been appointed instructor of telephone engineering at Purdue University, LaFayette, Ind. Mr. Achatz is a graduate of Purdue and has been engaged in telephone work practically all the time since his graduation, with the exception of a short period in which he was engaged in appraisal work for the Arnold Co., of Chicago. He has had a varied experience, both in the operating and engineering departments, of the Chicago Telephone Co. Mr. Achatz is well fitted by experience and inclination for his new work and will, no doubt, be highly successful.

New Companies and Corporations.

MINNEAPOLIS, KANS.—Articles of incorporation have been filed by the Farmers Mutual Telephone Co. with $7,500 capital stock. The incorporators are: G. W. Barker, Herman Stalter, C. W. Swallow, George Bradbury, Searl Nelson, John Gawith, Edward Brennerman, Howard Scott and Charles Botrock, all of Minneapolis.

SOMERSET, KY.—The Somerset & Mintonville Telephone Co. has been incorporated with $560 capital stock. The incorporators are: W. H. Waddle, Oscar Girdler, C. H. Fischer, Logan Dentbon, Gahala Wesley.

NEWBURGH, ONT.—The Sebley Telephone Co., Ltd., has been incorporated with a capital stock of $5,000 to carry on a general telephone business.

MOUTAIN CITY, TENN.—The Johnston County Telephone Co. has recently been incorporated with $4,000 capital stock. The incorporators are as follows: S. M. McQueen, of Butler, C. T. Lepscomb, D. H. Donnelly, C. C. Donnelly and N. A. Donnelly, of Mountain City.

STUART, VA.—Articles of incorporation have been filed by the Farmers Telephone Co. with $4,968 capital stock. The incorporators are as follows: H. L. Wimbrish, president, and A. W. Williams, vice-president, of Stuart, W. M. Tatum, secretary-treasurer, of Stella, C. Hooker, of Elamsville, and J. B. Beach, of Stuart.

Construction.

LOS ANGELES, CAL.—Plans are being drawn by the Pacific Telephone & Telegraph Co. for the erection of a modern, fireproof, six-story exchange building in this city.

DULUTH, MINN.—A. J. McCulloch, general manager of the Zenith Telephone Co., has announced that a direct line will be built to Hermantown, to cost approximately $1,200. Connections will be made from the Lincoln exchange. Already forty-five farmers along the road have subscribed for service.

MANKATO, MINN.—The Mankato Citizens Telephone Co. is contemplating to build a new line to Madison Lake by way of Eagle Lake. At the present time the line to Madison Lake goes by way of Lake Washington and Marysburg, and it is expected that the short cut will increase the efficiency of the line.

HUNTINGTON, N. Y.—The New York Telephone Co. has purchased a site and will erect a new three-story exchange building in this city.

WINTHROP, ONT.—Plans have been drawn for an extension to the McKillop Twp. Telephone System to cost in the neighborhood of $2,400.

Underground.

BIRMINGHAM, ALA.—The Southern Bell Telephone & Telegraph Co. contemplates expending $87,000 to improve and extend the telephone system in the Birmingham district, including considerable underground construction work.

Elections.

BARRON, WIS.—The annual meeting of the Barron County Telephone Co. was held recently and the officers were re-elected for the coming year. They are as follows: Dewitt Post, president; T. W. Borum, vice-president; C. J. Borum, treasurer, and J. E. Horsman, secretary.

Miscellaneous.

ELKHART, IND.—Work will soon be started on the new exchange building of the Home Telephone Co. in this city.

THE FAULTLESS

OUR GUARANTEE

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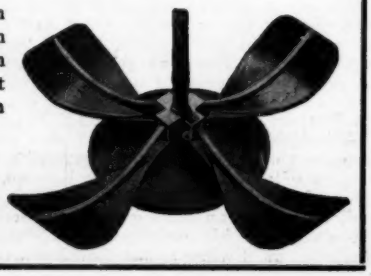

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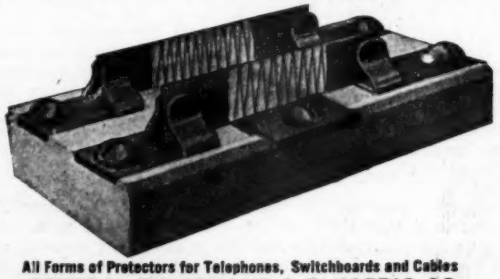

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